ORIGINAL

PUBLIC MEETING

Grand Teton Mall
Community Room
2300 E. 17th Street
Idaho Falls, Idaho

April 18, 1994
6:35 p.m.

MODERATOR

Nolan Jensen, Department of Energy

ORGANIC CONTAMINATION IN THE VADOSE ZONE

Presenters:

Patti Kroupa, Department of Energy

Amy Lientz, EG&G Idaho

NAVAL REACTORS FACILITY
INDUSTRIAL WASTE DITCH AND LANDFILL AREAS

Presenters:

Richard Nieslanik, Westinghouse

Dary Newbry, Department of Energy,
Naval Reactors Facility Project Manager

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I N D E X

IDAHO FALLS, IDAHO, MONDAY, APRIL 18, 1994, 6:35 P.M.

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MR. NOLAN JENSEN: Okay. We'd like to welcome you all out tonight, ladies and gentlemen, to our public meeting for a couple of the INEL environmental restoration programs.

My name is Nolan Jensen, and I work at DOE here at INEL. And we've got two projects tonight that we're going to be discussing, and our meetings here have two basic purposes. One, of course, is to just provide information to you all and hopefully give you enough understanding about the projects that you can ask questions or provide comments if you would like to. The other key reason for this meeting is to allow you an opportunity to provide comment if you would like to. So, as you'll notice, we have a court reporter here for that purpose later.

Again, we have two projects tonight. One of them is titled Organic Contamination in the Vadose Zone at the Radioactive Waste Management Complex. I know that's a mouthful, but the presenters will explain a little bit more what that -- what that project is about.

The other project is the Naval Reactors Facility Industrial Waste Ditch and Landfills, and that will be the second subject that we'll talk about tonight.

Also as an aside, there are two other things going on in conjunction with these meetings. One of them is our semiannual briefings. Every six months or so, we go out and give just a general status update about the whole program in general. And if any of you were at center court out here in the mall, you saw some posters associated with that semiannual briefing. And in six months, we're expecting to do another one that will emphasize more of the waste management parts of INEL, that program, in addition to just environmental restoration.

Also as an aside, the Naval Reactors Facility has two other projects out. They're called removal actions. Those are smaller cleanup type projects. They're not part of the meeting tonight, but there is a comment period on those going on. And we have some fact sheets. I assume they're outside. They look like this. And if you want some information on that, you can talk to the presenters tonight or look at that fact sheet.

Also, I forgot to mention for the

semiannual briefings, there's a Citizen's Guide that was put out to give you information on the program in general.

Okay. Like I said, we'll do the meeting almost like two separate meetings. The first part of the meeting will talk about the Organic Contamination in the Vadose Zone, and what we'll do is we'll have a presentation by a couple of the project managers that'll last about ten or fifteen minutes, and then we'll have a question-and-answer period at the end of that. Then we'll have a quick break while we set up for a formal comment period. And during that comment period, then we'll formally take comments and they'll be recorded by the court reporter.

We are in the -- within a thirty-day comment period for both of these projects. The first project that we'll be discussing, the comment period ends at the end of this month on April 30th, and the other, the second project about the Naval Reactors Facility, ends on May 12th.

And also, if you -- tonight, like I said, we'll provide an opportunity for you to give comments, but any time during the public comment period, you can provide written comments. And on the

proposed plans, also that are out back, there is a preaddressed, postage paid comment sheet. So if you'd like to pick up one of these, you can submit this comment sheet any time during that comment period. And also, those comments will be formally responded to in a Responsiveness Summary, a written Responsiveness Summary.

And in a few months, there'll be a Record of Decision that comes out formally making a decision on the cleanup, and that Record of Decision will have the written responses to your comments in it so you can see how they were addressed.

Okay. We want to keep this relatively informal, so if during a presentation if you have a quick clarification question, go ahead and ask the presenters. If it's a longer question, we might ask that you save it until the end for the question-and-answer period.

And if you have any questions on topics that aren't related to tonight's projects, can we give those to you, Reuel?

MR. REUEL SMITH: Yes.

MR. JENSEN: Okay. There's Reuel Smith in the back and he can answer other questions about other things like -- I don't know. We have an EIS,

an Environmental Impact Statement, that's in process. Any other -- any other questions you might have, you might focus those to Reuel.

Okay. Also, Department of Energy is partners, if you will, with the Division of Environmental Quality here in the state of Idaho and also with the Environmental Protection Agency in the agreement that we signed to do our cleanup projects. And we have representatives from both of those agencies tonight.

So Linda? Linda Meyer is here from EPA. If you'd like to say something, we'll give you a minute.

MS. LINDA MEYER: Thank for your interest in the projects. I'm glad to see this turnout based on the weather. But I guess we kind of take the team approach, and we all have agreed -- or reviewed the technical information that's in the administrative record and have reached these consensus decisions. So we're here tonight supporting these proposals that are being presented. I'm representing both of the projects this evening, so if you have any questions from our agency's perspective, I'd be happy to answer those.

MR. JENSEN: Thank you.

Who should I talk -- do you want to introduce anyone? Daryl, are you the right guy? Or Margie?

This is Margie English from Division of Environmental Quality.

MS. MARGIE ENGLISH: I'm the state representative working with the NRF project. I guess I'd like to introduce a couple of my co-workers also from the state. Dave Hovland, who's the technical supervisor. He's been real active in some of the evaluation work that we've done over the past year. Jeff Fromm, who is our toxicologist and helps to evaluate the sites from a risk point of view. And Gary Winter, who is our hydrogeologist.

Again, I want to welcome you here. We're very glad you came. The state really encourages public participation in this process, not only at this meeting but through the decision-making process in the INEL environmental restoration.

And we've worked real hard over the past year both with EPA and DOE to evaluate the sites that you're going to hear discussed tonight. The preferred alternatives that you will hear are the ones that are currently favored by our agencies, but we want to emphasize that the actual decisions for

any cleanup have not been made yet and will not be made until the close of the public comment period and that we will take your comments and we'll use them to help -- to help come to our decision on what the final decision regarding remediation will be at these sites.

And once again, I just want to thank you for coming and please encourage you to make comments and to ask any questions while you're here. Thank you.

MR. JENSEN: Thanks, Margie.

Okay. Before we introduce the first project, though, in order to help this perhaps go a little bit more quickly and be more understandable, there is one concept that I'm going to introduce right now, and that is the concept of risk and how we're going to present that tonight.

If you look over here, we've developed this chart to explain risk. Now, we talk about risk in a couple of ways. One is when we go out and look at the sites that are potentially contaminated sites, we do a risk assessment basically to find out if there is a problem that needs to be cleaned up and then also in terms of what is the best cleanup method for reducing that risk.

So there are a couple of things I want to mention really quickly, and we'll be using this chart for both of the projects, so I want to introduce it quickly.

The first one is carcinogenic risk, and basically that's in reference to contaminants that are potential carcinogens or cancer-causing agents. And the Environmental Protection Agency has come up with an acceptable risk range in the case of carcinogens, and what this is, it's expressed in terms of probability of contracting cancer, and basically the risk range goes from one in ten thousand to one in a million individuals. So essentially what this says is if you had -- I guess in this case, if you had ten thousand people exposed to the environment that we are assessing, you would expect that perhaps one of those people would contract cancer. So this range is what we're going to be referring to tonight. And so also, if you're within this range or below it, that would mean that that's within the acceptable limits. If you're above it, then you're getting out of it.

For noncarcinogenic risk, it's expressed in terms of a hazard index. Now, in this type of risk, what we're talking about is health

effects other than cancer-causing. For example, a contaminant might cause liver damage or kidney damage or have some other health effect. That's expressed in terms of a hazard index, and it doesn't -- there's no risk range as there was for carcinogenic risk, but there's a hazard index of one established. And what that reference point says is that if you're below a hazard index of one, we're fairly certain that there is no chance that anyone would have that potential health effect. As you get above one, the certainty that that effect won't happen decreases. So the farther you get above one, the more potential that you have of having a health effect.

So any questions on that? As we get into it tonight, hopefully this will be a little more clear, but I just wanted to introduce this concept.

Any questions?

Yes, John.

AUDIENCE: I think it might be helpful if you said the acceptable risk means if one additional person in ten thousand gets cancer. In other words, out of ten thousand people, U.S. experience is two thousand would get cancer anyway, but we'll accept this risk if instead of two thousand, two thousand and one persons get cancer.

MR. JENSEN: That's correct. Very good. Thank you.

Okay. I'll go ahead and introduce our first speakers tonight, then. First of all, we'll hear from Patti Kroupa, who's the DOE project manager, and then Patti will be introducing Amy Lientz, also who will be a presenter tonight.

Patti?

MS. PATTI KROUPA: Thank you, Nolan.

I'm going to go ahead and talk about -- give you a little background on the history of the contamination and basically why we're here today remediating the project, and then Amy's going to talk a little bit about the remedial investigation results and the risk assessment, and then I'll come back and talk about the feasibility study of the alternatives that we looked at and our recommendation that we're looking for your comments on on our proposed remedial action.

And so the area that we're talking about is the Radioactive Waste Management Complex. It's located in the southwestern portion of the INEL. We commonly refer to this as Waste Area Group 7. It's one of several remediation projects that are going on right now at the INEL. The state has the

primary oversight responsibility for Waste Area Group 7.

When we talk about the vadose zone, we're talking about the ground surface all the way down to the water table, which is about 585 feet. The vadose zone is a geological term for -- and this is one part of the vadose zone. This is what we call volcanic basalt. This is a sample of what we encountered drilling -- or monitoring wells last summer, and so I'll pass this around.

What has happened is over time, there were drums that were placed in all of these pits of volatile organics, which are things like carbon tetrachloride, chloroform, things that are commonly used as degreasers. Well, it went into these pits in drums, and then over time, from say 1966 to 1970, is when it was active. And then over time, what we found was that these drums had deteriorated causing these gases to escape into the subsurface. So I'll go ahead and pass this around.

We also have in the subsurface two interbeds, one at the 110 and one at the 240, and they're acting as barriers of migration in retarding the migration because of the geological material they're composed of, sandy silts and sand. And this

was a sample taken from the 110-foot interbed.

Okay. I think that's about it for the background. I'll go ahead and turn it over to Amy.

MS. AMY LIENTZ: In August of 1991, we initiated the remedial investigation, and the purpose was to determine the nature and the extent of the contamination within the vadose zone. And through extensive sampling, which included sampling of the groundwater, perched water, soils, vapor, and air, we determined that the contaminants were primarily concentrated within this area right here. This is right above the 110-foot interbed which Patti explained to you.

The results also indicated that the contamination is moving both laterally and vertically, and vertically meaning both upwards and downwards, but primarily down. And as it's moving down, like Patti explained, the interbeds are slowing the contaminants towards the aquifer. So currently right now the contamination in the aquifer is below state and federal drinking water standards.

We have five contaminants of concern, and the primary contaminant of concern that we are seeing in the highest concentration is carbon tetrachloride, and that's typically found in your

solvents and paint thinners. In addition to that, we've got other contaminants that are found in degreasers and used oils, and that includes 1,1,1-trichloroethane, tetrachloroethylene, and trichloroethylene.

In addition to the sampling that we conducted, we also conducted a treatability study on vapor extraction technology. And we wanted to do a treatability study on this technology because, one, we knew that it was working very successfully at other sites with similar contamination problems, but what we did not know was did it work in the unique subsurface characteristics that we were finding at the INEL and would it work at extracting our five contaminants of concern.

Well, a large part of that study was conducted last summer from March until September, and it was quite successful. We had an extraction well through the heart of the contamination, and it did work successfully at not only pulling contaminants from this zone, but as far as out as 450 feet.

So with this new information that we gathered from the treatability study and with the information that we obtained during the sampling events associated with the remedial investigation, we

conducted a fate and transport model. And a fate and transport model is a computer-simulated program that aids us in the risk assessment by telling us what our peak concentrations are, in our case, to the atmosphere and to the groundwater.

The modeling results indicated that the contaminants to the atmosphere have already peaked and concentrations are since decreasing with time, and the contaminants in the aquifer will peak in approximately 77 years. And the contaminant that will peak in the highest concentration is carbon tetrachloride, and carbon tetrachloride will peak at about 125 parts per billion, and the maximum concentration level for carbon tetrachloride is 5 parts per billion.

So after we did the fate and transport modeling, we moved on to the risk assessment. And let me move on from here.

The risk assessment helps us determine what the current and future potential risks are to human health. And we evaluated varying time frames from 1992 until the year 2121, and we looked at three different locations. We looked at a location at 200 meters right at the SDA, the Subsurface Disposal Area boundary, at 500 meters just off of the boundary, and

at the INEL southern boundary, which is at 5,200 meters. And we looked at an individual that is engaged in two different types of activities, and that included a worker and it included a resident.

For a worker, we assumed that a worker would be living within this -- or not be living, but be working in this area within the next hundred years, and during that time that the Department of Energy is operating and maintaining this site, there would be certain controls and restrictions in place that would prevent the use -- the use of contaminated groundwater. So therefore, because that use of contaminated groundwater is being prevented, we see few pathways associated with the worker. The pathways include the inhalation of organic contaminants through the vadose zone to the individual while they're both indoors and outdoors.

For a resident, we assumed a resident could potentially be living in this zone here, the 5,200 meter location. Although they're not living there now, we assumed they could potentially be living there after 100 years. After DOE is operating and maintaining this site, they could live anywhere within this area, but the restrictions and controls would not be in place that would prevent use of

contaminated groundwater. So that explains why we see more pathways associated with the resident. Those main pathways are inhalation of vapors, dermal contact of the vapors, and ingestion of vapors while the individual is indoors and outdoors.

So with that, what are our risks to the worker and to the resident. For a worker, assuming again the pathway being the inhalation of vapors and assuming that the individual was within this 200 meter zone, we showed a -- I'm going to go back to this chart real quick since you're now familiar with it -- we showed a carcinogenic risk -- we showed an acceptable carcinogenic risk that fell right in this area here, six in one hundred thousand. For a worker, we did show a hazard index that fell above the acceptable range at two here.

For a resident that could potentially be living here at the 200 meter location and at the 500 meter location during the time frame after that 100-year control period, we did show a carcinogenic risk that fell outside of the acceptable range, and that was two in ten thousand, which falls approximately right here. And for the noncarcinogenic hazard index associated with that resident, the hazard index ranged from three to

seven, depending on the location of that individual and the time frame. So the maximum range to that was at seven here.

For a resident at the 5,200 meter location through the pathway of use of contaminated groundwater, the -- there was a carcinogenic risk, but that fell in the same range that we saw for the other resident at two in ten thousand, and a hazard index that fell this time at five for that individual.

So in summary of risks, we did show potential risk to both the worker and to the resident. So with knowing that, we knew that we had to look at alternatives that would minimize that risk. And ways to minimize that risk include to extract and treat those contaminants, destroy those contaminants in place, or contain those contaminants in place.

So with that, I'm going to turn it back to Patti to explain to you our alternatives that we have devised that meet this criteria.

MS. KROUPA: During the feasibility study, we looked at several alternatives, and they were pretty much narrowed down to four alternatives that we carried through a detailed analysis.

The first alternative, which is pretty much your baseline alternative, which is the No Action where you would simply leave all the contaminants in place, there would be no attempt to extract or treat, and over time, they would end up migrating to the aquifer. You would continue with groundwater monitoring and soil vapor monitoring to look at their rate of movement. And that cost would be about $4 million.

The next alternative would be a containment where you would put some form of a cap over 88 acres. And the contaminants would remain in place. You would reduce any infiltration of surface water, but the contaminants, since they're already in the subsurface, would continue to migrate. That had a cost of $43.3 million, and we screened that alternative out because we didn't think that it was effective in stopping the migration of the organic plume.

The next alternative, which is the preferred alternative and the one we're recommending to you tonight, and that is where the organic vapors would be physically extracted and treated. And we are proposing that this be done in phases because it's a complicated subsurface and we're not quite

sure how long it will take and we want to maintain flexibility in being able to see that it's the best system and it's also cost effective. That cost is $12 million to $32.4 million, depending on how long you run the system.

The next alternative is an enhancement of Alternative 2 where you would heat the soil through radio frequency and that would enhance the volatilization of the organics. And that cost was $59.9 million, which we thought that we could receive the same amount of removal and protection and it would not cost as much.

So this is coming back to the preferred alternative. What we're proposing to do is to place in the first phase five additional extraction wells in the areas that we know are sources based on our soil gas surveys and our soil and vapor monitoring. And then we would have ten monitoring wells so that we could evaluate the effectiveness of the system. And we're thinking right now that because of the complexity that we want to start with the first phase, which would be two years. And then again, we would continue to monitor, to measure the effectiveness of the system.

The gases would be coming in through an

extraction well, and then we're looking at catalytic oxidation, which is appealing because it's waste minimization. The contaminants would be destroyed on site.

And we will look at other treatment alternatives as we go through the remedial design process, but right now we're looking at this to be the preferred treatment for the off-gases.

So that's basically it in a nutshell. I'll turn it back over to Nolan.

We're looking for public comments by April 30th, and then we're hoping that we'll have a decision on the remedy by November. So thank you.

MR. JENSEN: Okay. Thanks, Patti.

You were very good. You didn't ask any questions. But now we're going to actually have a question-and-answer period, so I'm going to get Patti and Amy to come back up. And if you have any questions, just raise your hand. I'll keep this really informal. We'll run that up to 20, 30 minutes if we need to, and then we'll take a quick recess again and come back for the formal comment period.

So any questions?

MS. LIENTZ: No questions? Must have been a straightforward presentation, right?

Do you like it? Do you like the preferred alternative or --

MR. JENSEN: You really want questions, don't you?

MS. LIENTZ: There's one.

AUDIENCE: Are there any other means of soil heating being examined other than radio frequency such as putting a borehole down and running a turbojet engine or something that can press air and heat it and then blow it through the area where your vapor extraction is?

MS. KROUPA: Chris, did we look at any other ones?

MR. CHRIS HAMEL: My name is Chris Hamel. I'm with Dames and Moore, and I assist EG&G and DOE with some of the evaluation of alternatives.

We looked at several innovative approaches for enhancing recovery of the vapors, but we focused on radio frequency heating because it seemed to us to be the most cost effective. Blowing warm air down into the subsurface would be more difficult to control and we may run the risk of actually dispersing the contaminants to an extent that it would be more difficult for us to recover them with something like that. We evaluated several

other technologies, though.

AUDIENCE: One other item on this. All this is predicated on the current plume that you have and cleaning it up or having the existing amount of contaminants migrate, but there's still drums out there with additional material. Is that factored into this -- the rate of deterioration of the drums, is that what we're seeing into the next century, that we're going to assume they're going to leak as well, or is there any kind of rebarreling or remediation of the existing stored items so that we don't get continued leakage?

MS. KROUPA: We have several other investigations going on that will -- you might say that we're addressing the secondary source, and we do have several investigations that will alleviate the source. One is Pit 9, which is -- you may be familiar with it. It's excavation and retrieval. Also, there's an entire remedial investigation planned for the entire SDA, and that'll look at sources as well. So there are other plans to deal with the primary sources.

MS. LIENTZ: And we did factor in the deterioration of the drums associated with that.

AUDIENCE: So the plans and the costs

that you're looking at are basically if they remain in place and continue to leak. These other remediation projects that you're looking at would only enhance the project of getting rid of the source, then?

MS. KROUPA: Right.

MS. LIENTZ: Go ahead. Who have we got here, Nolan?

MR. JENSEN: Okay. I saw Jack first, so I'll let him go.

AUDIENCE: Did you consider using the natural breathing system of change of barometric pressure to use that as a motor to drive the vapors out and collect them at the surface?

MS. KROUPA: We were looking at passive venting systems for that part of the phased approach in keeping flexibility. I think it's felt right now that the contamination is significant enough that it would require physical extraction. During the treatability study that we ran last year, we had pretty high concentrations, as high as two or three thousand parts per million.

AUDIENCE: Has anyone seen how much a well can exhale when there's a barometric low? Have you -- we've demonstrated that a lot. I wonder if

you've looked at that.

MS. LIENTZ: Right. There was a study, and I think Jeff knows a little bit about that, a barometric pressure study that was done.

MR. JEFF SONDRUP: Wayne Downs is looking at that currently and just collecting data in the open borehole to see how much it breathes. He's just measuring air flow right now, not contaminant concentrations.

MR. JENSEN: Could you speak a little louder, Jeff?

MR. SONDRUP: Okay. I'm sorry. My name, by the way, is Jeff Sondrup with EG&G, and I did the fate and transport modeling for the OCVZ project, and I think Jack brings up a very important point. Changes in barometric pressure naturally -- well, those will cause the air in the vadose zone to move, and that is a potential venting mechanism to bring those contaminants out of the ground and up into the air and into the atmosphere.

We're looking at that, but we do know that this venting has been -- whatever venting occurs has been going on since these things were placed in the ground almost 30 years, and still we have a large amount of contaminants down at a hundred feet and we

have contaminants in the aquifer. And so natural venting without enhancement through wells placed in the ground has not served to decrease the contaminants such that we wouldn't have a problem.

AUDIENCE: Jeff, I was assuming that you would use the wells you have and, instead of extracting, to use them in the natural venting system. Of course, the well is a short circuit for this volume of air that will go in. You'd have to have a valve system that would prevent the barometric high from injecting air down into the well. And then when you have a barometric low, it would exhale out the well and you'd be surprised at the volume you can get out of there. But I realize the natural layered system of the RWMC would be a much slower process.

MR. SONDRUP: We're looking at that. One of the problems, though, is where you get the kind of venting I think that we need to remediate and take care of this problem would require a great number of wells, and then with each well, you'd have to have a treatment system or some way to capture the vapors from each well and then treat those, and I think it becomes very costly. We need some kind of mechanism to draw those out with a fewer number of wells and a fewer number of treatment systems.

MR. JENSEN: Mr. Tanner, and then in the back.

AUDIENCE: Well, if you did go to this well extraction method and vapor did come out, would it be above the emission limits or could it be allowed to simply vent it?

And the other question, you said that in spite of the natural processes, the concentration has been increasing in the soil, but I assume that's because the sources are still there. Have you considered a combination of this natural venting with removal of the sources?

MS. KROUPA: We are considering the natural venting and we are looking at that for subsequent phases.

AUDIENCE: In combination with removal of source?

MS. KROUPA: Uh-huh. That's why we want to -- our goal is to maintain flexibility to see how the subsurface will react and to be flexible in the types of things that we're doing.

MR. JENSEN: He had a two-part question on the venting. Did you answer that?

MR. SONDRUP: The concentration to be over the emission limits?

MR. JENSEN: Was your question can we just suck out the vapors and then vent them to the atmosphere? Was that the question?

AUDIENCE: Yes. Either suck them out and vent them or let them come out naturally through these wells and then let that vent, either way.

MR. SONDRUP: If we naturally vent the wells, would concentrations exceed air quality emission regulations? I believe the answer to that is yes.

AUDIENCE: Thank you.

MR. JENSEN: Yes, sir.

AUDIENCE: I believe you indicated that taking no action would result after a period of 77 years of concentrations 25 times acceptable levels at the aquifer; is that correct?

MS. LIENTZ: Correct, yes.

AUDIENCE: If you do Alternative Number 2, what results do you expect in terms of peaking contamination at the aquifer and at what levels? In other words, what percentage of extraction will occur?

MS. LIENTZ: Do we know that, the percentage of extraction that would occur?

AUDIENCE: Or reduction of risk.

MS. LIENTZ: Chris Hamel.

MR. HAMEL: Well, I guess what we had as a target was what we call the preliminary remediation goals, and those are outlined in a fair amount of detail in the Proposed Plan, and those translate to concentrations of these organic contaminants in the vadose zone. So the modeling supports -- if we can clean up to these preliminary remediation goals, the modeling supports the fact that we will not exceed the five parts per billion MCL, for instance, for carbon tetrachloride.

So that's what we're targeting in terms of cleanup. And operating Alternative 2 will continue so we can achieve those remediation goals, those concentrations in the vadose zone.

MR. JENSEN: By the way, the Proposed Plan that he was talking about -- where did Reuel go? I believe there's some outside on the table. They look like this.

Any other questions? Yes.

AUDIENCE: As I remember, it seemed like most of the organics from Rocky Flats came here over a three- or four-year period. It seemed like -- the statement was made that they're in all the pits, and I don't think that's a correct statement.

MS. KROUPA: We did do soil gas surveys, and we did find that there were some sources. This is part of the 1992 study.

AUDIENCE: I don't think they were in all the pits.

AUDIENCE: But, Jack, have you looked at the picture up there? Those are the pits that we suspected the organics were placed in, just those pits, not all the pits.

AUDIENCE: As I remember, the highest concentration was over a two- or three-year period that was brought here from Rocky Flats.

MS. KROUPA: It's primarily Rocky Flats.

AUDIENCE: '66 to '70, yes.

AUDIENCE: So I don't think you have to dig up all the pits to get the soil study. You can concentrate your effort perhaps more in the infiltration wells.

AUDIENCE: Patti, maybe it would be a good idea for Jeff to explain why we think the rate of migration of contaminants from the source has peaked and it's decreasing so we should be concentrating more on the vadose zone and less on the pits in terms of organics.

MR. SONDRUP: Sure. What we're talking about here is that there have been some studies at the Subsurface Disposal Area to look at how -- to retrieve drums or look at the condition of drums that have been buried for a certain number of years. And those studies have told us that after -- well, one of the data points says that after about 20 years, 80 percent of the drums have failed or deteriorated in some manner such that the contaminants could be released or get into the subsurface environment.

Therefore, using that information or a model, most of the contaminants -- the bulk of the carbon tet, the trichloroethylene and these contaminants -- have escaped their original containers, and that's what the assumption is. And therefore -- and that's evidenced -- evidenced, I think, by the fact that the bulk of the contamination is not near the source or near the pits but is down 100 feet, 80 feet below the pits. And therefore -- and the problem, the hundred and some odd parts per billion in the aquifer that was predicted to happen in 77 years is mainly a result of the contamination that is in the vadose zone and not in the pits, in drums that still remain intact.

MR. JENSEN: Also, I might mention just

briefly, I don't know if you've heard about it, another project that's ongoing is the Pit 9 project, and that one was out to public comment about a year ago probably, and that project is dealing just with this pit right here and looking at going in and extracting the source of the contaminants out of that pit. So we are looking at that as well.

Yes, sir.

AUDIENCE: I notice we have involvement with the Idaho Department of Environmental Quality and so on. If a lot of this stuff came from Colorado, what is Colorado's participation with their Department of Environmental Quality? Are they helping to foot the bill on this? I mean, they earned a living making this stuff, right? Could someone explain that?

MR. JENSEN: You'd probably like me to answer that, wouldn't you?

As far as I know, there has been a lot of interaction with them as far as getting good information on what they sent here. But the INEL is the Superfund site that's listed and the Idaho office here has the responsibility for managing that. So I guess we're assuming we're the same agency and we're incurring the costs and requesting funds from

congress through our department here in Idaho Falls to do that. But you're right, a lot of the waste did come from there.

AUDIENCE: Isn't there a cradle-to-grave responsibility in these instances? I mean, if Colorado generates it, aren't they somehow more involved than saying we sent you some nasty stuff?

MR. JENSEN: Well, I guess we're looking at it more as Department of Energy's responsibility, and we're both Department of Energy, so -- I don't have a better answer than that.

Yes, sir.

AUDIENCE: Well, the state of Colorado or those people had nothing to do with it. It was a DOE site. The criteria at that time was that anything that came out of there -- and not only Rocky Flats, but there are some other places in the country, too -- this was the receiving area, and that was set up by the government and set up around this reservation, and that's why the bulk of the money that's coming, or as you call it, the Superfund, comes here because they have no -- that was the accepted thing to do with it at the time and that's what everybody did.

Now we've got to go back and look at it, and the only responsibility that the state has in this is to work with DOE and with the governmental -- with the federal people to make sure that that is done properly. So you've got no comeback on Colorado or Rocky Flats or anybody for that particular thing because you're getting your money out of the Superfund to take care of what was done here when it was legal to do it.

MR. JENSEN: That's right. I just want to make one quick correction, though, and that is, DOE does not get to use Superfund money. We do have to request our own funds to do this. But other than that, you're right.

MR. DAVE HOVLAND: But in essence, the gentleman's described the Federal Facility Agreement which the state EPA and DOE are currently following now for the Superfund cleanup.

AUDIENCE: Yeah. That agreement says that there's other involvement as well, and so it gets quite complicated, but it makes good reading.

MR. JENSEN: Thank you.

Okay. Any other questions?

Okay. It's getting kind of stuffy in here. We'll give you five minutes or so to go get

some fresh air, and we'll get set up and give our court reporter a rest here for a minute and come back and allow you to give comments.

(Recess taken.)

MR. JENSEN: Okay. Folks, if we could get going again. I think we just about have everyone back in here now. We're going to go into the formal comment part of our meeting tonight, and this part of the meeting is a little bit more formal because we actually have -- we'll have the court reporter here taking your comments. We won't respond to your comments. This is just your time to give your comments. We may ask you a brief clarification question just to make sure we've got the comment correctly, but it's your time to give a comment if you'd like.

Again, we have the court reporter up front. If you would please keep your comments to about five minutes so we can make sure everyone gets a fair chance. And also, if you could either make sure you speak very loudly so that the court reporter can hear you clearly or maybe come forward if you would like. And would you also please state your name, and if it's an unusual name, please give her the spelling so she can spell it correctly for the

record.

We do have tonight one of our state representatives with us, Jack Barraclough, and he said that he would like to give a brief comment. So we'll first give him the opportunity, and then if you would like, we'll take your comments.

Jack.

MR. BARRACLOUGH: Jack Barraclough, State Representative, District 29.

This is an interesting project to me because I first started studying the burial ground about 30 years ago at the RWMC. And along the studies, we defined the geology of which they're still using and had a feeling for what to do with this waste that's been placed there.

In 1980, we looked for organic contaminants. We looked in the parts per million range and couldn't find them. In 1987, they were detected in the parts per billion range.

The vapor vacuum extraction is a very exciting project, and it's one that Dr. Dave Allman -- about ten years ago, Dr. Dave Allman and I recommended it, but we had a little bit different concept where we'd use the natural breathing and venting by using wells as a short circuit and using

the changes in barometric pressure as the pump and then filter the air.

I think the system that they've developed now is superior to our original concept, except we wanted to introduce cold air during the winter to freeze what moisture was in there to prevent downward migration of water carrying contaminants.

And I think the analysis is good and I think the modeling studies are good. And I support the preferred alternative, and I think it's probably the most cost effective and the most dynamic, but I would suggest that you do seriously consider natural -- using the changes in barometric pressure as more cost effective, maybe not now, but in the future.

I'd like to commend the people for the job they've done. Thank you.

MR. JENSEN: Thank you, Jack.

Is Reuel here? I didn't see anyone that had signed up to give a comment. Was there anyone who signed that?

MR. SMITH: I'd better check.

MR. JENSEN: Is there anyone else who would like to give a comment tonight?

Yes, sir. Please come forward and give

your name.

MR. C.E. WHITE: I'm C.E. White, Jr., Idaho Falls.

With the way that this will have to be done over the years, I think that the alternative that Jack is talking about is going to be the one. I just -- I just don't think that we -- with the barometric pressure, it's going to take too many years to do it. I think it's going to be a slower process to do it, Jack. I don't know. You may not agree with me, but I think it's going to be a lot slower.

And we will have to -- the government will have to come up with money every period, every budget period, to allocate to this. And I think that if we choose the number two one, which is the pump, I think we've got a good chance of getting it funded because I think it will work and I think we can prove it will work. So my comment would be yes, I agree also that that would be the alternative to accept.

MR. JENSEN: Thank you.

No one signed up, so anyone else? Would anyone like to give a comment? Going once.

Okay. We'll conclude this portion of the meeting, then. Again, remember the comment

period on this project runs until April 30th, so you can submit written comments any time between now and then.

And we'll just take another quick break for the Naval Reactors people to set up their presentation, and then we'll go through it basically like we did the first time. Okay. Thank you.

(Recess taken.)

MR. JENSEN: Okay, if we could have your attention again, we'll go ahead and get started.

We welcome you to the second half of the meeting tonight. The second half of the meeting we'll be talking about a cleanup project out at the Naval Reactors Facility.

And before I introduce the speakers on that, there are a couple of concepts that are new tonight that we're going to be discussing, so I'd just like to introduce those very briefly.

The first one is the concept of presumptive remedies. The Superfund law has been in effect for over ten years now, and there has been a real emphasis in the country to spend more money on actual cleanup and try to spend less on investigation and studies of the sites rather than actually cleaning them up. And one of the things that has

been found now is that on several sites, consistently the same types of sites are being cleaned up in the same way. And so the thought is that there are certain sites that have a presumed remedy. In other words, for example, tonight we'll be talking about landfills. Generally landfills are cleaned up the same way, so why spend an awful lot of time studying different cleanup alternatives unless there are some really unusual circumstances.

The second topic that we're going to introduce tonight, and that is formalizing some of our preliminary investigations. The INEL is into the third year of our agreement on the cleanup program, and we started out with about four hundred sites that we were going to assess, and several of those sites had different levels of investigation. Some of them were very preliminary, a small-scale investigation because the sites were very uncomplicated. And now we've completed several of those, and from now on, you'll likely hear, as we come out for these public meetings, we'll be letting you know what went on in those preliminary investigations and formalizing those discussions and decisions as well in conjunction with these Records of Decision.

So hopefully you'll understand those

concepts a little bit better as the presenters get into their discussion.

I'd also like to mention again, we do have representatives from EPA and the State of Idaho here with us.

And do you want to say anything in addition? I think everyone was here.

MS. ENGLISH: No. I think we covered it last time.

MR. JENSEN: Okay. I'd like to introduce, then, first Dary Newbry. He's with the Naval Reactors Branch of the Department of Energy. Did I say that right?

MR. DARY NEWBRY: That's right. Good enough.

MR. JENSEN: Okay. And then he will introduce Rick Nieslanik, who will also speak to us tonight in a couple of minutes.

Dary.

MR. NEWBRY: First of all, I'd like to welcome everyone here tonight and thank you for attending this evening. This is the first public presentation for environmental cleanup that we've had for the Naval Reactors Facility. And throughout the evening, I'll be saying Naval Reactors Facility and

NRF synonymously. NRF is the acronym for Naval Reactors Facility.

As Nolan mentioned earlier, two items of investigation we're going to be covering in our Proposed Plan this evening, the Industrial Waste Ditch and historical landfills. Before we get into the discussion of those areas, I'd like to first give you some background.

The NRF was first established in 1949 as a testing facility for the Navy's Nuclear Propulsion Program. Since then, it's operated for nearly four and a half decades as a -- as primarily a testing facility for the Naval Reactors Program and also to obtain research and development data.

The NRF is located in the central-west portion of the INEL, which is approximately 54 miles west of Idaho Falls. It is operated by Westinghouse Electric Corporation for my office, the Division of Naval Reactors of the Department of Energy.

The NRF consists of three training facilities and one research and development facility. The first training facility, S1W, was constructed in 1952. It is the first naval nuclear propulsion plant. It was designed and developed for the first naval nuclear submarine, the USS Nautilus.

It operated for nearly four decades. It was shut down in 1989.

The second training facility constructed was A1W. It was constructed in 1958. It was used for the first nuclear-powered aircraft carrier, which is the USS Enterprise. A1W just recently shut down this past January.

The third training facility, S5G, which is currently the only operating reactor plant at the Naval Reactors Facility, was constructed in 1965 and currently scheduled to be shut down mid next summer.

The fourth facility at NRF is what's known as the Expended Core Facility or ECF. Here the naval nuclear fuel, the spent fuel, is received, inspected, and they conduct research on that fuel, support components, and materials.

Over the years, NRF's population has ranged from fifteen hundred to three thousand personnel. Because of that, it's typical to that of a small community like Rigby. And being like a small community, we have those waste streams which are generated in a small town. And you have waste streams like sewage wastes, liquid wastes, municipal landfill wastes, just typical household garbage. And that's what brings us to the two areas of

investigation that we'll be talking about tonight.

The Industrial Waste Ditch, which this picture shows right here, we've had liquid affluent discharges to this ditch, and the reason we're investigating it is because of past known discharges of both inorganic and organic constituents. This ditch was never used for radioactive waste discharge. None of the areas we'll be discussing tonight were used for radioactivity.

The other area of investigation and of concern are historical landfills. We had nine historical landfill sites, suspected historical landfill sites. We conducted an investigation and concluded there were only four sites that were actual landfills, and Rick will get into a further discussion on that.

And at this time I'd now like to turn it over to the Waste Area Group manager for Westinghouse Electric Corporation, Rick Nieslanik.

MR. RICHARD NIESLANIK: Thanks for being here. As Dary mentioned, the reactor plants on site -- S1W, which is located here, A1W, which is located here, and S5G here -- use cooling water to remove excess heat from the plant. The cooling water systems that we use on site simulate the sea water

cooling that would be used aboard ship. The heat is dissipated in either cooling basins or cooling towers.

Excess water from these cooling systems is collected along with snow and rain runoff and water softening regeneration solutions in a network of piping and open culverts over to the west side of NRF. The water flows -- this is north -- from east to west and it's collected in a culvert that runs along here. The culvert then discharges to this ditch.

The ditch is an old streambed. It's been in operation since 1953 approximately and has received these various water streams. In these water streams have been solutions that contain trace amounts of things such as chrome, mercury, silver, oil, and other impurities. Over the life of the ditch, it's been periodically dredged to remove the sediment from the bottom of the ditch to improve the infiltration of the water and also to increase the flow.

The ditch is 3.2 miles long. However, water has historically only flowed in the first two miles of the ditch. Due to recent reductions in operations, the water currently flows in only about

the first mile of the ditch.

The sediments in the bottom of the ditch and the dredge piles that I mentioned earlier were the focus of the investigation we conducted on the ditch. The sampling program collected samples from the dredge pile and from the ditch sediments in a systematic pattern along the length of the ditch.

We also wanted to characterize the soil beneath the ditch and to project and estimate the migration potential of these contaminants away from those soils and sediments, so a series of boreholes were drilled in a line perpendicular to the ditch at several locations along the ditch.

Soil samples were collected at various steps in each of these holes, and they were analyzed for soil type as well as contaminants that were in there. We found that in the first five to eight feet of the soil beneath the ditch is where the majority of the contaminants were contained.

We also sampled the groundwater that we found during drilling operations and also the groundwater in the Snake River Plain Aquifer. Analysis of these water bodies showed that the contaminants were below the drinking water standards.

We also projected, using fate and transport models, what would happen if all of the contaminants that we found in the dredge piles and sediments migrated down to the aquifer. That modeling showed that if all of that -- all those contaminants migrated, there would be -- the Snake River Plain Aquifer would still not have any contaminants above the drinking water standards.

The results of the soil and sediment sampling identified eight constituents of concern, things that we felt we needed to investigate further. They were chrome, mercury, nickel, zinc, copper, lead, and barium. All of these are naturally-occurring materials. However, we found that concentrations of those materials at several locations in the ditch banks and sediments that were above what we would expect them to be in the native soil and undisturbed soils around NRF and elsewhere on the INEL. Therefore, we carried those constituents over to our risk assessment.

The risk assessment process defined by the EPA starts with an estimation of the exposure that an individual could receive from the contaminants in the area that you're considering. We looked at three different individual receptors. The

first one is a worker who would work on the banks of the ditch. The next one were residents, a residential individual who lived in a house on the bank of the ditch, and also an agricultural receptor who grew crops, fruits, and vegetables in the soils in and around the Industrial Waste Ditch.

Several assumptions have to be made in order to calculate that exposure. Even though the area around the ditch is currently not acceptable -- accessible to anyone for building homes or to farm, we assume that that could happen in the future. And therefore, we looked at -- conservatively said that this house could be built right on the bank of the ditch, that these dredge piles on the banks could be spread out and that area could be farmed and fruits and vegetables and that type of thing could be grown in that area for these residents to consume. We also assume that the person would build a house and live there for thirty years and that, like I said, the fruits and vegetables were actually grown in this soil.

We looked at the three main pathways of exposure, inhalation of dust and vapors, absorption through the skin due to contact with the soils, and then ingestion through groundwater, meat and dairy

products, and fruits and vegetables grown in the area.

As Nolan mentioned earlier, the toxicity of those contaminants is categorized as either being carcinogenic or noncarcinogenic. The highest carcinogenic risk that we found was one in seventy thousand, and that's through an inhalation pathway of airborne dust coming from the dredge piles. This one in seventy thousand risk number, as Nolan mentioned earlier, means that if seventy thousand people receive this level of exposure, you would expect to have one additional case of cancer above the national average.

The noncarcinogenic risk is primarily due to ingestion of fruits and vegetables grown in the dredge pile soils on the bank of the ditch. Hazard index of 1.3 was calculated for that pathway of growing those fruits and vegetables in the sediment -- in the dredge piles.

We also calculated a hazard index based upon growing those fruits and vegetables not uniformly along the ditch, but in very specific locations where the concentrations were the highest. In that case, we had a hazard index of 2.2.

As we discussed earlier, a hazard index

of one represents with a high degree of certainty that there will be no adverse health effects due to that exposure. With the hazard index that we have of 1.3, 2.2, in that range, it's still not expected that there would be any hazard -- any adverse effects. However, the certainty associated with these numbers are lower.

Therefore, they looked -- the agencies looked very close at all the conservatism that were built into these calculations and have made the assessment that the risks calculated, that the data gathered from the investigation, result in finding no reason to proceed with any action. They are therefore recommending and proposing for your consideration a No Action alternative for this ditch.

Since we're discussing a No Action alternative and the risk assessment and the sampling indicates that that's appropriate, a detailed feasibility study was not conducted and we haven't presented any alternatives for your consideration. A No Action alternative is being proposed.

Before I go on to the next project, I'll take some questions on this one.

AUDIENCE: Did you run the cost of what it would cost to fill the ditch with native soils?

MR. NIESLANIK: Not a detailed estimate, but we did --

AUDIENCE: A ballpark?

MR. NIESLANIK: -- do some ballpark estimates.

MR. NEWBRY: It might not have been pointed out the ditch is still operational. We're still using that ditch.

MR. NIESLANIK: Right. So to fill it with native soil would mean we would have to build an alternate liquid waste facility. So the cost is not just filling it up, but an alternate facility. So it's kind of difficult at this point to put a dollar value on it.

AUDIENCE: You say that there's probably no adverse health effects as far as noncarcinogenic or carcinogenic risk.

MR. NIESLANIK: Right.

AUDIENCE: Is there any pyretogenous or any other risks that would --

MR. NIESLANIK: The contaminants that are identified are primarily metals. And those, the toxicity of those metals primarily deal with specific organs that become -- that accumulate those metals. So my -- and I'm not the toxicology expert here, but

my recollection is no. These are all systemic-type reactions or reactions to accumulation of those metals.

MR. JEFF FROMM: And the toxicity values that are used to generate those hazard indices have -- they're based on, for each individual contaminant, different toxicological events or different types of conditions that these could cause. But they also include in those numbers themselves a number of layers of safety factors.

So, for example, they'll take the concentration of causes and effect in animals and then add several orders of magnitude of safety factor to that to come up with a toxicity number. So I think, because of that, when we're around a hazard index of one or slightly greater than that, it's not -- it's not like the cancer risk range.

MR. NIESLANIK: As an example, these two risk values are due primarily to mercury concentrations. The reference dose is what they use to represent the toxicity of that material. For mercury, we used the reference dose for methyl mercury, which is a particular form of mercury, the most toxic form of mercury. The published safety factor or uncertainty factor associated with that is

one thousand. Couple that with the fact that the mercury probably isn't one hundred percent methyl mercury, only a portion of it is, so those are the layers of safety factors that are built into this number already.

MR. NEWBRY: If you missed the introduction earlier, that was Jeff Fromm with the State of Idaho, a toxicologist for the State of Idaho.

MR. NIESLANIK: Any more questions on the ditch? If not, I'll proceed to the next portion, which is talking about the landfills.

MR. JENSEN: And by the way, we will have another question-and-answer period afterwards if you think of some questions while they're doing the other part of the presentation.

MR. NIESLANIK: The second investigation that I want to talk about tonight centers around some landfill areas around NRF. There were nine areas originally identified as potential landfill areas.

During the initial investigation, the screening of these areas, five of the -- five of these areas were identified to contain no buried waste. They were surface debris or staging areas or

things that really had nothing buried there. So those, the agencies are proposing no action.

There were four sites that were given more detailed investigation. Following the investigation, one additional site was identified as requiring no action based upon the sampling results.

Nolan mentioned earlier the concept of a presumptive remedy. I want to talk about that and the investigation, and understand that that investigation centered on only these sites. These others, like I say, are recommended for no further action.

The presumptive remedy for landfills is based upon a study that the EPA did where they took a random sampling of all of the municipal waste landfills that were on the national priority list, and they looked at what remedies were selected for that random sampling. And they found that every single one of those used a containment of the wastes in place with some type of cover.

The problem with investigating a landfill is that it's very difficult to characterize what's buried there. If you sample in a particular location, you may hit something like a cleaning agent. That's not necessarily representative of what

you might find somewhere else.

The landfills at NRF are very similar to landfills you'll find anywhere in the country. They contain the same types of waste, cleaning agents, kitchen waste, paint waste, construction debris, scrap metal, paper waste, and household and industrial chemicals.

Based upon a record search -- rather than sampling the actual contents of the landfill, NRF went off and did a record search. Records were not kept of what was actually put into each of these landfills. These were operated from the early '50s through 1970. Records were not necessarily kept. However, records were kept from 1970 on for wastes that were shipped down to the Central Facilities Area landfill.

Based upon those records, NRF projected what they think probably went into each of these landfills. Based upon that, they did some risk calculations, but that's not the primary driver for determining an action. The presumptive remedy concept is you use previously selected remedies to help guide you in selecting the next remedy along with site specific data that was collected.

The sampling and the investigation that

was done at each of these areas was primarily geared at determining the boundaries of these areas, and also we took soil gas samples which allowed us to get a general qualitative idea of the types of organic contaminants that were there. Some of the other contaminants were estimated based upon this record search.

Within the context of the presumptive remedy, three alternatives were selected for detailed evaluation. A No Action alternative, which in this case consisted of leaving the landfill contents in place, accepting the existing cover that's there, and performing no sampling or monitoring.

The second alternative was a containment with a native soil cover, the landfill contents left in place, native soil cover and native vegetation placed over the landfill, groundwater and soil gas monitoring for an extended period, surveying, fencing, and land use restrictions, and the estimated cost for this is $2 million.

The third alternative is very similar to the second alternative except for the cover is now an engineered clay cover. Contents of the landfill are still left in place. The groundwater and soil gas monitoring is the same. The surveying, fencing,

land use restrictions are the same. The estimated cost for this one is $7.5 million.

As we were doing the evaluation of these alternatives, we established remedial action objectives, those things that we wanted to be able to make sure that the selected alternative met. They included protecting or isolating the area from future access because we don't really know what's in here, so we want to prevent access to that area in the future. Reducing the mobility of the contents of this, preventing it from migrating to the aquifer and protection of the aquifer.

These two alternatives meet those objectives. This one does not. This one was eliminated. These two both meet it. They both reduce the mobility with the cover, they both have land use restrictions to prevent access in the future, and they both monitor the groundwater and the soil gases so that we can protect the aquifer, protect people who might come in the area from the vapors that come off the landfill.

Alternative 2 is the proposed alternative based primarily upon the cost difference. Since both of these are acceptable, the lower cost alternative has been proposed.

That pretty much covers the details of the landfill investigation and the proposed alternatives there. I want to recap briefly to make sure everybody's clear.

There are two separate actions here. One is the Industrial Waste Ditch. There, the agencies are proposing no action based upon the risk assessment and the sampling.

The other one is the landfill areas. On this one, they're proposing no action on six of the nine sites and they're proposing a native cover on the other three sites, and that is based upon the presumptive remedy concept which is using the remedies selected and proven at other locations to help us select the remedy we would like to implement here.

Now I'd like to open it up for questions.

AUDIENCE: In considering number two with your native soil cover, Dr. Tom Hackason, I believe is his name, from Los Alamos, has included a bio-barrier with gravel to prevent animals from digging into the soil cover. Did your alternative consider something of that nature? By putting large gravel, a couple feet of large gravel, over the

native soil cover, it helps in wind erosion and it helps to prevent burrowing animals which can reach the cover, and I wondered if you had considered that.

MR. NIESLANIK: We have not looked at that. Our next step in the process is to go through the Record of Decision process and then to the detailed design of the cover. We haven't gotten into the details of that. We do have guidelines in the regulations that talk about the permeability of that cover, but we haven't gotten into the details of the design, and that's something we'll look at in the design phase.

AUDIENCE: There's a study from Hanford that has a similar recommendation too.

MR. NIESLANIK: I appreciate that. We'll look into those as part of the design.

We've got one back here first.

AUDIENCE: C.E. White again. I don't know whether we're doing this on there or not.

But I happen to have owned a ranch in Nevada which had very similar native soil to this. And I know exactly what Jack's talking about with the rodents. We never were successful in keeping rodents out by just putting native cover.

And the other thing is that I believe

with what native cover I've run across out on the site, it is pretty absorptive. There's nothing in that native soil which you can really bind without adding something that would keep snowmelt or whatever from going down and penetrating. I don't think it's any different than some of the others. So I guess I'm concerned about using number two alternate.

MR. NIESLANIK: I'd like to address two things relative to that. One is native soil and the regulations that define the permeability ranges that that native soil cover have to meet. Off the top of my head, I can't quote those, but the regulations do define a permeability of this cover.

Also, the design of the cover itself will be geared to control that runoff. We're fortunate that this area is a very dry climate, but they do get large, short-term precipitation events.

So the cover again will be designed to channel and control that runoff away from the contents themselves and out and away.

Also, the permeability of some native soils do fit the criteria established in the state regulations of acceptable cover, and that will be again factored into the design phase of that cover.

AUDIENCE: I know we used to have to

add bentonite to our native soil to get a shield to cover over anything that we were trying to do like that. And I guess it might depend on where you got your soil from on the site, but a lot of what I've seen there, it would sure give me the quivers.

MR. NIESLANIK: There are lots of different types of soil on the site. What you commonly see is a loess cover over a very sandy alluvium just below that. There are also areas in some of the lower areas where there's a higher clay content and a much less permeable soil.

AUDIENCE: You've got the ditches out there. You've got some clay in the bottom, you know, those depressions. There is clay there if you went and got your native soil out of there.

MR. NIESLANIK: And we have looked at that and the cost estimates. We have looked at hauling soil from anywhere on the site.

AUDIENCE: From anywhere on the site.

MR. NIESLANIK: And we'll go find soil that meets the permeability requirements specified in the regulations.

AUDIENCE: Well, then, what you're really indicating, then, is a cross between Alternative 2 and Alternative 3 because we're going

to have some sort of clay-like nature of the soil in the native soil cover.

MR. NIESLANIK: It's -- I hate to say it will be a clay-like nature. Again, I get back to the concept of applicable and relevant appropriate requirements. We've identified the relevant and appropriate requirements for a cover design. State regulations do define guidelines, as well as do the federal regulations, on what the cover should be. And it's based on permeability, not necessarily on the clay content. They go hand in hand, I understand that, but we will do tests on the soil to ensure that the permeability of this cover meets those regulations.

AUDIENCE: I think you've definitely got to consider the rodents. I don't know how much consideration you've given to it, but that is a definite problem anywhere in that type of an area. And I know it's out there because there's lots of rodents out there, and they can really go down.

MR. NIESLANIK: This area right here is a landfill area. It's -- the last waste was placed in this landfill in 1965, did we say, based on records and interviews and that.

Currently there's quite a bit of cover

in this area. It's not designed, it's not contoured. But as part of our sampling, we tried to figure out how much cover there is there, and it's somewhere in the neighborhood of four feet. We see very little rodent activity in this area. You go right over here where all this grass is and you see lots of it because there's something there for them to eat.

Yes, we understand that there are rodents and we have to deal with that.

AUDIENCE: And when you go outside of the plant area and go out for like 53 or whatever up there where you've got less disturbing of their movements, I think you're going to see more there too.

MR. NIESLANIK: That will be taken into account. Thank you.

MR. NEWBRY: Part of the remedial design which calls for monitoring will also call for going out and annually inspecting the area, seeing if there is a problem with erosion or rodents carrying away the garbage, and that can be addressed in the future. We're not going to go put the cap on it and walk away from it.

MR. SONDRUP: You say some of the soils

fit the permeability criteria. Is that an undisturbed permeability measurement?

MR. NIESLANIK: I don't think the regulations are that specific that they say undisturbed permeability. Our intent is to take samples, test the permeability, and then select the proper soil.

MR. SONDRUP: Because when you take up soil and you place it on the land, the permeability of the disturbed sediment is going to be much greater than a sample that's been sitting there.

AUDIENCE: By definition, a soil cover has to be disturbed, so the criteria on the permeability of the existing cap is determined by the compaction and the layering and the mineral diameter and mineral content of the native soil.

MR. NIESLANIK: So it's an installed permeability. Let me clarify that.

Any other comments? Questions, I should say.

MR. WHITE: On the ditch, I certainly couldn't take any issue with what you've said on the ditch. I've seen that ditch over the past years. And with the analyzation of what you've gotten out of it, I certainly think your no action remedy or

whatever you want to call it would be the appropriate one. I can't see where it would disturb anything in the future. That stuff will eventually go on its way anyway. And so I would agree with that.

MR. JENSEN: It sounds like we're getting into the comment part of the meeting.

MR. WHITE: Well, I thought we were. I'm sorry.

MR. NEWBRY: Shall we keep going right into it?

MR. JENSEN: Is everyone willing to go right -- do we have any more questions, or shall we go right to the comment, the formal comment part?

MR. WHITE: My comment I already did for both items, and she was typing merrily away.

MR. JENSEN: Did you get his name to go with that, then?

THE COURT REPORTER: Yes.

MR. JENSEN: Okay. Can we go ahead, then, and start the formal comment period?

And, Jack, you said you'd like to give a comment.

MR. BARRACLOUGH: In looking first at the waste ditch, the way these systems operate -- I'm Representative Jack Barraclough, District 29.

The way these systems operate is that when you put water in the ditch, most of it seeps in the ground. A little bit evaporates, usually ten percent or less evaporates. Most of it infiltrates into the ground, goes down through the sand, gravel, silt, and clay down to the top of the basalt.

And while basalt in itself is highly permeable, some of the most permeable rocks anywhere in the country, the top of the basalt usually spreads the water out, contrary to your drawing which was incorrect. But it spreads the water out, and the perched water's above the basalt, not in the top of the basalt.

It spreads it out, which is a really good system because the sediments, as the water moves through, removes a lot of the contaminants. And then it spreads out and seeps down in much smaller quantities and then can be perched on other sediment beds within the basalt beds. And each one of these helps remove contaminants. And so the system has a lot of natural cleanup just during the operation of it.

And then the fact that the aquifer is like 365 feet below there is a long ways with a lot of these processes to attenuate the waste. And then

the monitoring that we've done over the past 30 years in the Snake River Plain Aquifer below NRF has only shown plumes of sodium and chloride principally and a little bit of nitrate at times, so it doesn't show any of the heavy metals. And so the system as has operated over the years, you already have the conclusion that there's not many contaminants going down.

And I carried a deal in the legislature this year that to my knowledge is the first in Idaho that introduces the fact that risk is a very viable thing in looking at any contaminants. We'll never be able to afford to clean up all the waste to what Lewis and Clark would have found had they drilled a well there. But we need to spend our money wisely and always factor in what is the risk to humans with these contaminants.

And so I strongly support the No Action alternative with the waste ditch. And then when NRF is ever closed, I would use some native materials and fill it in.

On the landfills, I did mention the bio-barrier, and the very best landfill at all is something that has a geomembrane and then about six feet of material on it so that the -- and then the

gravel soil cover for burrowing animals so that the water can infiltrate the cap, be held at a time until evaporation removes all the water, and you actually can -- and that's how caliche is formed. So you actually make the soil cover less permeable with time by natural processes.

But the -- in my judgment, the amount of risk from the contaminants in the landfills and the relatively small amount of water infiltrating is never going to be an insult to the aquifer. So I really support your preferred alternative on that, on the landfills.

And again, I think your analysis is very good because -- basically because it confirms my preconceived notion.

MR. WHITE: Jack, are you trying to say don't confuse me, my mind's made up?

MR. JENSEN: Would anyone else like to submit a comment now?

Okay. We'll close the comment period, then. And just again, I'd like to remind you again that you can submit written comments through the end of the comment period.

MR. NEWBRY: May 12th.

MR. JENSEN: Through May 12th. So we'd

welcome you to do that. And if you have any other questions, I'm sure folks will be milling around for a few minutes here afterwards and you can talk to them more if you would like.

With that, thank you again for coming, and we'll let you go get fresh air.

(The proceedings concluded at 8:25 p.m.)

REPORTER'S CERTIFICATE

STATE OF IDAHO)
) ss.
County of Canyon)

I, CAROLE A. WALDEN, a Notary Public in and for the State of Idaho, do hereby certify:

That said proceedings were taken down by me in shorthand at the time and place therein named and thereafter transcribed by means of computer-aided transcription, and that the foregoing transcript contains a full, true and verbatim record of said proceedings;

I further certify that I have no interest in the event of the action.

WITNESS my hand and seal this 27th day of April, 1994.

Carole A. Walden

CAROLE A. WALDEN, CSR
Notary Public in and for the State of Idaho, residing in Caldwell, Idaho.
My commission expires 10-29-99.

ORIGINAL

PUBLIC MEETING

Boise Centre on the Grove
850 Front Street
Boise, Idaho

April 20, 1994
6:40 p.m.

MODERATOR

Nolan Jensen, Department of Energy

ORGANIC CONTAMINATION IN THE VADOSE ZONE

Presenters:

Patti Kroupa, Department of Energy

Amy Lientz, EG&G Idaho

NAVAL REACTORS FACILITY
INDUSTRIAL WASTE DITCH AND LANDFILL AREAS

Presenters:

Richard Nieslanik, Westinghouse

Dary Newbry, Department of Energy,
Naval Reactors Facility Project Manager

Reported by:
Carole A. Walden

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I N D E X

BOISE, IDAHO, WEDNESDAY, APRIL 20, 1994, 6:40 P.M.

* * *

MR. NOLAN JENSEN: I'd like to welcome you all to our public meeting tonight. And first of all, my name is Nolan Jensen. I work for the Department of Energy in Idaho Falls, and I'll be acting as a facilitator tonight for our meeting.

Our meeting really has two purposes. One is, as you can see, to provide information on the work that we're doing in the INEL environmental restoration program or the cleanup program, and the other purpose for our meeting tonight is to give an opportunity to citizens who would like to comment on the work that we're doing. So those are the two basic reasons for us being here tonight, and we are very appreciative of you coming.

We have two projects that we'll be discussing tonight, and our meeting will almost be divided into two completely separate meetings. The first one, we'll be talking about a project called Organic Contamination in the Vadose Zone. That's at the Radioactive Waste Management Complex. I know that's a lot of words, but our presenters will

explain more what that is when that time comes. And the other one is the Industrial Waste Ditch and Landfills at the Naval Reactors Facility. That'll be the second part of the meeting.

Also as an aside, we are in the process of going around the state doing semiannual briefings, and that is where twice a year we go out and just give people an update on where all of the different projects are that we're working on. And there is information -- there's a Citizen's Guide over on the table, and that explains pretty much the whole program, a general outline and summary of the whole program.

The other thing I would like to mention is the Naval Reactors Facility, we'll be discussing one particular project tonight, but they are also in the middle of a public comment period on two removal actions. And removal actions are small-scale cleanup activities that are ongoing, and we'd just like to also mention that there is a fact sheet regarding those if you're interested in that. And our presenters will be around after the meeting if you'd like to talk about those projects as well.

Okay. Again, I said our meeting will be in two parts, and the way that we will operate is

we'll have -- we'll start out with a little presentation about the project, and then -- that'll last about ten or fifteen minutes, and then we will have a question-and-answer period so you can ask any question you want. We would ask you -- during the presentation, you can ask clarifying questions. We'll try to keep it very informal just so that we can move on. If you have any in-depth questions, maybe save those until after. After the question-and-answer period, we'll take a real short break, and then we'll come back and open a formal comment period, and that's the time where we would just accept comments.

We have a court reporter here tonight, and she will be recording both the proceedings of the meeting and the comment period. So if you speak, please speak loudly enough that she can understand. If we're answering questions or whatever, if you'd please speak clearly and loud so she can hear.

Also, I'd like to introduce a couple of people now. The Department of Energy is in a -- we work under a Federal Facility Agreement, and there are three agencies that are working on that agreement together. The Department of Energy is one of them, of course. The other is the Environmental

Protection Agency. And the third is the Department of -- Idaho Department of Health and Welfare. And we have representatives from both of those agencies with us tonight as well.

So I'd like to turn just a minute over to Linda Meyer here from the Environmental Protection Agency and Margie English from the Department of Health and Welfare just to say a couple of words.

MS. LINDA MEYER: I guess as Nolan said, I'm Linda Meyer with the Environmental Protection Agency. And for those -- I see there's some new faces here. And for those of you that aren't familiar with the process that we go through, you may wonder why there's all these groups of people involved.

So just to give you some background, the Federal Facility Agreement is a result of the INEL being on the Superfund list or the National Priority List. And because of that, they're guided by rules, the rules that are established under the federal, I guess, realm. The agreement was signed by the three agencies in 1990 and establishes --

MR. JENSEN: '91, I think.

MS. MEYER: -- identifies all the sites and establishes a schedule for cleanup of those sites

and investigation. And we get together with DOE and the State and reach an agreement on how we're going to investigate the sites, what seems to be the problems, and come to this -- this is kind of almost the end point where we reach a proposal for what we think needs to be done.

And at this point, we ask for your input. And this is our recommendation. We concur with the proposals presented here, but we're still -- it's still open. We're looking for your input, if these are good decisions and good use of federal money. And after your input, we put together a Record of Decision that lists the specific details and regulations we'll follow.

So we're looking for your input tonight. If you have comments on any of these proposals, we hope to hear from you. Thanks for coming, too.

MS. MARGIE ENGLISH: I'm the Waste Area Group manager for the State of Idaho working on the Naval Reactors Facility you'll hear about tonight.

I also want to take an opportunity to introduce a couple other members of our State team that are here tonight. There's Dean Nygard in the back. He's the State Federal Facility manager for

the entire INEL program. We have Dave Hovland, who's the remedial tech supervisor, and he's helped quite a bit as far as coordinating evaluations of the sites. And Jeff Fromm, who is a toxicologist, and he has helped evaluate these sites from a risk prospective. And Gary Winter, who is a hydrogeologist, and has helped evaluate groundwater issues regarding the sites.

On behalf of myself and my colleagues, I would really like to welcome you here tonight. We're very glad that you're here. Echoing what Linda said, the State also encourages the public participation process.

And the three agencies have worked very hard over the past year to evaluate these sites and, as Linda said, the alternatives that are presented tonight are the ones that are currently favored by the three agencies. However, the actual decision for remediating these sites has not been made and it will not be made until after the public comment period closes some point later than that. And we really would take any comments that you would make and use them to help reach that remedial decision which, as Linda said, will eventually be formalized in a Record of Decision.

So again, I want to again thank you for coming and encourage you to ask any questions that you may have tonight and offer any comments regarding the sites that you'll hear about. Thank you.

MR. JENSEN: Thanks, Margie.

Just a couple of other quick things. I don't know if you saw this, but also, each of these projects has a Proposed Plan to explain the project. Those are on the table. And we're in the middle of a 30-day public comment period on each of those projects. And the last page of the Proposed Plan has a preaddressed, postage paid comment sheet. So any time during that period, you can submit comments on these projects, and the comments will be addressed in a -- it's called a Responsiveness Summary, which is a written document that explains how the agencies have responded and taken your comments into consideration as they have finalized the decision. So any time during the period, you're welcome to submit a comment.

Also, one other thing. If there are any -- again, we'd like to keep this fairly informal, believe it or not, so if you have questions on any topic related to the INEL, even though our presenters tonight will be speaking about specific projects --

we don't have people here who know everything about what goes on at INEL, but Reuel Smith, who is the guy outside the door there, if you have questions on anything going on there, please feel free to talk to him and he'll get you in touch with someone who can answer your questions. We also have an INEL outreach office here in Boise, and they're more than happy to get you information or answer questions that you might have.

So now before we introduce our first subject tonight, our first project, there are just a couple of things I wanted to cover with you. If any of you have ever been involved with the cleanup process, especially under the law that we commonly call Superfund, we talk a lot about risk, risk assessment, and use those terms. It's kind of an abstract topic. We use risk -- we evaluate the risk that these sites pose so we know if they need to be cleaned up, and we also evaluate the best cleanup alternatives to reduce that risk.

And when we talk about risk, tonight I'd like to introduce this chart, and hopefully it will help the presenters to explain the work that they have done on these projects better.

When we talk about risk, we generally

talk about two types of risk. The first is carcinogenic risk, and carcinogenic risk is basically contaminants or chemicals that are cancer-causing agents or thought to be cancer-causing. And what has -- what the Environmental Protection Agency has done is established a risk level that they deem to be acceptable, and that level is shown on the chart here. It's between one in ten thousand and one in one million.

And what that basically means is, if we're at this level right here, if we had ten thousand people who were exposed to the environment that we are studying, if ten thousand people were exposed to that, we would expect that one of those people would contract cancer above the national average. So that's what that -- that's what that range means. So anything from here on down basically means that we're within the acceptable range. Above that, we're exceeding the acceptable range.

The other type of risk that we talk about is the noncarcinogenic. That's the other health effects, chemicals that might cause nerve damage, organ damage like liver or kidney damage, things likes that. Those are the types of risks that we talk about on this side of the chart.

We express it a little bit differently. It's expressed in terms of a hazard index, and the hazard index is essentially an evaluation of certainty. And there's a hazard index of one that's established, and that represents a level at which, if you're below a hazard index of one, there's a high degree of certainty that no one, even sensitive populations like little children, if we're below that, they wouldn't even likely have that health effect. As we increase over one, then our surety that those health effects won't happen decreases. So as we increase over one, we have to be more careful about our assessment. And tonight as the presenters talk about risk, they will explain that in terms of these charts, so I hope that will give you a little bit of an introduction.

Is there any questions about anything I've said tonight before we --

AUDIENCE: I've got a question.

MR. JENSEN: Yes, sir.

AUDIENCE: You know about this risk factor here, don't you tie that into a time frame? In other words, if you say nobody gets killed one out of ten thousand, within ten seconds, nobody gets hurt, you know. But if you say that the time frame

is over a hundred years, that's another story. So could you kind of go over that part?

MR. JENSEN: When they -- when the presenters talk about the projects tonight, they will explain the different scenarios that they went through to evaluate the risk. And you're right. It's evaluated under, for example, a current situation or what if someone lived there fifty years in the future or a hundred years in the future. And they will explain that to you as we get into the projects.

AUDIENCE: Okay.

MR. JENSEN: Okay. With that, I'm going to introduce our first presenters tonight. And we have Patti Kroupa here from the Department of Energy, who is the project manager on the DOE site for this first project, and Amy Lientz from EG&G, who is also one of the technical project managers. So I'll turn the time over to Patti now.

MS. PATTI KROUPA: Thank you, Nolan.

I'm going to talk a little bit about the INEL, the Idaho National Engineering Lab, give you some history on it, the disposal that occurred, and then Amy will talk a little bit about -- we just finished a remedial investigation, and she'll go

ahead and talk about that and the risk assessment, and then I will finish up with a discussion of our feasibility study and the remedial alternatives that we looked at in our recommendation for cleanup.

So I'm sure all of you are aware that the Idaho National Engineering Lab is located about 50 miles west of Idaho Falls. The area that we're talking about tonight is in the southwestern portion of the site called the Radioactive Waste Management Complex. And the State of Idaho has primary oversight responsibility for this Waste Area Group. There are several different projects going on.

When we talk about organic contamination in the vadose zone, what we're talking about is a subsurface contamination problem. The vadose zone is the area that covers from -- this is an aerial photograph of the Radioactive Waste Management Complex. It's an 88-acre facility.

And the vadose zone is the ground surface all the way down to the water table, which is about 580 feet. It's primarily composed of basalt and volcanic material. I brought a sample to show people because it's very unique geologic material. And so this is the area that we're actually trying to do the remediation in, so I'll go ahead and pass that

around. It's kind of heavy.

And then there are two interbeds. One is at the 110-foot level and one is at the 240-foot level. And we know through our investigations that these act as confining layers to migration of the contaminants. Maybe we'll talk a little bit more about that. And this interbed material is composed of sandy silts and sand and clays.

From about 1966 to 1970, we received wastes at this complex, primarily solvents, degreasers, things like carbon tetrachloride, chloroform. And over time -- they were packed in containers or drums, and over time -- this was at the active disposal area. It's no longer active. But in these pits here, primarily these drums went into it, and over time we know that they have failed and we have migration of contaminants.

And so Amy will fill you in on that extent of the migration.

MS. AMY LIENTZ: In August of 1991, we initiated the remedial investigation. And the purpose of that was to determine the nature and the extent of the contamination within the vadose zone here. And so through extensive sampling events, which included sampling of the groundwater, perched

water, soils, vapor, air, we determined that primarily the contamination was concentrated within this area here. This is right above the 110-foot interbed that Patti was referring to.

The results also indicated that the contamination is moving laterally across the interbed and vertically, vertically meaning up and down but primarily downward. And as it's moving downward, it's being slowed by these interbeds. So currently right now, the contamination that's in the aquifer is below federal and state drinking water standards.

We have five contaminants of concern. And that includes carbon tetrachloride, which is a contaminant typically found in solvents and paint thinners, and we also have contaminants that are typically found in used oils and degreasing agents, and that includes 1,1,1-tricholoroethane, tetrachloroethylene, and trichloroethylene.

In addition to the sampling that we conducted during the remedial investigation, we also conducted a treatability study. And we conducted a treatability study on a technology called vapor extraction, which is somewhat depicted here. This is -- we knew that vapor extraction would work real well -- works very well at other sites with similar

contamination problems, but what we did not know was would it work in our unique subsurface characteristics at the INEL and would it work at extracting those four contaminants of concern.

So last summer, from March to about August, we conducted the -- a large part of that study with an extraction well through the heart of the contamination here. It worked very successfully. But in addition to telling us that it would work successfully at the INEL, we also found out a lot more about the nature and the characteristics of our vapor plume that you see here.

So with that data and the data that we also gathered during the sampling events, we went on to a fate and transport modeling stage. And a fate and transport model is a computer-simulated program that helps us determine what our peak concentration levels are, in our case, to the atmosphere and to the groundwater.

The results of that modeling showed that our contaminants to the atmosphere have already peaked and have since decreased with time, but our contaminants to the aquifer, if no action is taken, will peak in approximately 77 years. And the

contaminant that will peak in the highest concentration is carbon tetrachloride, and carbon tetrachloride will peak at 125 parts per billion, and the maximum concentration level for the federal and state drinking water standard is five parts per billion.

With our fate and transport modeling results, we then went on to a risk assessment which Nolan alluded to earlier. And a risk assessment helps us determine what the current and the potential risks are to human health. And we looked at several time frames from 1992 until the year 2121, and we looked at three different locations.

We looked at the location at 200 meters, which is right at the Subsurface Disposal Area boundary, we looked at 500 meters just off the side of the Subsurface Disposal Area, and 5,200 meters, and this location is considered the INEL southern boundary.

So we looked at those three locations and we looked at an individual engaged in two different types of activities. We looked at a worker and a resident.

For a worker, we assumed that the worker would be working in the Subsurface Disposal

Area for the next one hundred years. And during those hundred years, the Department of Energy would be operating and maintaining that site so there would be certain controls and restrictions in place that would prevent or inhibit the use of contaminated groundwater. So therefore, you see fewer pathways associated with these two -- with the worker. The pathway is inhalation of organic contaminants from the groundwater through the vadose zone to the individual while the individual's both indoors and outdoors.

Now, for a resident, we assumed that they could be potentially living at the 5,200-meter location right now. Although there are no individuals currently living there, we assume that they could be living there. And after a hundred years, they could be living anywhere in this site, but the Department of Energy wouldn't be having those controls and restrictions in place that would prevent the contamination -- use of contamination of groundwater. So therefore, we see more pathways associated with the resident. The primary pathways are inhalation of vapors, dermal contact like skin contact, and ingestion, direct ingestion of contaminated groundwater while an individual's

indoors or outdoors.

So with that, what are risks to the worker and to a resident. I'll keep this here for now. That's fine.

We'll go back to Nolan's story board here and one right here. For a worker again at the 200-meter location through the pathway of use of -- of inhalation of contaminated vapors, we showed a carcinogenic risk -- I'm going to grab a couple arrows to help demonstrate where they fell -- we did show a carcinogenic risk, but it fell within the acceptable range at six in one hundred thousand. We did show a noncarcinogenic hazard index that fell above that acceptable level of one, and it fell at two for a worker.

Now, for a resident either at the 200-meter location or at the 500-meter location, through the pathway of use of contaminated groundwater during the time period after that control period, after one hundred years, we did show a carcinogenic risk posed to that worker -- or that resident at two in ten thousand, which falls just above the acceptable risk range right there, and we showed a hazard index that ranged -- depending on the time frame and the location of that resident, it

ranged from three to seven, with the maximum just falling at seven just right about there.

Now, for a resident that's at the 5,200-meter location that could be potentially living there now or after the 100-year control period, we also showed a carcinogenic risk through the pathway of use of contaminated groundwater. And that carcinogenic risk was the same for the other resident at two in ten thousand, and there was a hazard index that was slightly lower for that resident at five.

So in summary of the risks, we did show a risk to a worker and to a resident if there is no action taken. So with that, we knew we had to evaluate certain alternatives that would minimize that risk.

And that's the wrong slide here. I'll keep that one up there.

We had to look at certain alternatives that, like I said, would minimize that risk and that would be to either extract and treat those contaminants or destroy those contaminants in place or contain those contaminants in place.

So with that, I'm going to turn it back to Patti Kroupa to explain to you what those alternatives are.

Did you have a question, ma'am?

AUDIENCE: You say destroy them. How do you destroy them?

MS. LIENTZ: She'll explain that real shortly coming up.

MS. KROUPA: During the feasibility study, we developed several alternatives, and they were screened out based on criteria such as effectiveness, implementability, protectiveness, cost. And we came down to four that were carried through a detailed evaluation.

The first one was where you would simply not do anything. You would -- there would be no attempt to extract or treat. You would simply monitor the soil and the groundwater over time, and the contaminants would remain in place and continue to migrate at the rate that they're migrating at a cost of $4.1 million.

The second alternative would be where you would put a cap over the entire 88 acres of the Subsurface Disposal Area and the contaminants would remain in place. However, this would stop infiltration, but since the contaminants are already in the subsurface, they would continue to migrate. And the cost of that is $43.3 million.

The next alternative, which is our recommendation, is that the organic vapors be physically removed and treated and that this would be a phased approach based on the complexity of the system -- I'll talk about that a little bit in a little bit -- where we would look at phasing the system out in six years. And this is the first phase, which is a two-year phase, at a cost of $12 to $32.4 million.

Then the next alternative is basically an enhancement of Alternative 2 where you would use radio frequency heating to enhance the volatilization of the organics and theoretically you could extract more. And the cost of that was $60 million.

As I said, we're looking at a two-year phase. What we're proposing to do is in the areas where we know from the investigation our sources, we would put in five new extraction wells that would go down to the 240-foot interbed, and then we would put in ten new monitoring wells in areas around here so we could look at monitoring the effectiveness of the system.

What we would do is we would physically extract the vapors. They'd come up through the extraction well, and we're looking at catalytic

oxidation. We'd like to meet the 99 percent efficiency removal rate, and catalytic oxidation has been demonstrated to do that. When we were in Pocatello, we found someone that had quite a success with it with gasoline cleanup at the Pocatello airport.

This would be a flexible remedial alternative. Right now we think we can clean it up in two years, but we'd actually have to go the two years, do some monitoring, and see how effective we are. And it's going to be either a two-, four-, or six-year project. We could look at things like venting, passive venting. If we've gotten the heart of the plume out, we might consider passive venting as a way to remediate the rest of the plume. That might be something. So we want to maintain flexibility.

Yes.

AUDIENCE: Two questions. One would be with the extraction well and the monitoring wells, would they have the potential for increasing migration to the lower levels of these or other contaminants?

MS. KROUPA: We don't think that they do. Through our treatability study results, we were

able to seal off the zones so that we could isolate zones and figure out where along this system which is the highest zone of contamination and then seal it off with a well capper and then extract from there.

AUDIENCE: My other question would be, do the organic solvents affect migration of radionuclides that are existing there?

MS. KROUPA: We have not encountered any radionuclide migration. In other words, when we turned this extraction system on, we haven't pulled up any radionuclides at all.

So as Nolan said, we're looking at a comment period that will run through April 30th, and then we're hoping to enter into an agreement and a Record of Decision, as Linda mentioned, with all of the agencies that are involved by November and remove -- start the remedial design and construction phase. So I'll turn it back to Nolan for questions.

AUDIENCE: I have a question. We talked about -- you talked about dollars and different alternatives. You didn't talk about people. If you do nothing and spend $4.1 million, how many people do you expect to kill or will die?

MS. KROUPA: Probably no one.

AUDIENCE: Then what's the difference

between $4.1 million and $40 million if no one's going to die in either case?

MS. LIENTZ: Well, there still is a risk associated. If we take no action, the risk range is a lot higher. So the potential of somebody contracting cancer if no action is taken, because we'll be contaminating the groundwater approximately in 77 years, that risk is increased, so there is a potential still there if we do not take any action.

MR. JENSEN: Before -- I want to say one thing. We're going to open it up formally for lots of questions now and you can ask questions, but I wanted to note that if you do ask a question, both the askers and the answerers -- we have some other project people -- please speak loud enough that the court reporter can hear you.

And also I wanted to note that when we're done with the question-and-answer period, then we'll have a formal comment period. And during that time, that's a time for you to give statements or comments if you'd like and there will be no responses during that time. So just again to remind you how the flow of this will go. So go ahead and ask your questions.

AUDIENCE: Yes. Have there been

similar studies done in other countries who are experiencing this same type of problem that you could, you know, compare their results with our results -- or your results? Excuse me.

MS. KROUPA: Yeah. Vapor vacuum extraction has been used. It's a common technology, and I know that it's been used widely in the United States as well as overseas.

AUDIENCE: I am in favor of saving the planet.

MS. LIENTZ: Right.

AUDIENCE: I don't have a problem with that. EPA has a guideline or a chart that they use, dollars spent for lives saved, that they publish all the time. I saw one recently where it said that the landfills and -- not INEL, but landfills generally, were a $30 billion problem, and they expected that by spending this $30 billion over the next ten years, they'd save five lives, okay, whereas, something I know about, radon causes -- kills twenty to forty thousand people a year. EPA's number, not mine. It costs $50 million to clean the problem up, and you do not spend a dollar on it. I don't know what we're getting for our money.

MS. KROUPA: Do you want to talk about

the National Priorities List or --

THE WITNESS: Well, I just -- no. No, I really don't. I'm just saying we've got one action -- no action is $4.1 million, and if you don't do that, no one will die, she says. And you've got another action that's $40 million plus, and if you do that, five in ten thousand -- or six in ten thousand will die. What are we getting for our money? I mean, how many of those six people are going to get hit by a bus on the way to work instead of dying from cancer?

AUDIENCE: Or will their cancer be the result of smoking cigarettes?

AUDIENCE: There you go. I just don't know what we're getting for our money.

MS. LIENTZ: The only thing I wanted to add is if the contamination does get to the groundwater and exceeds the maximum concentration levels, the cost of a pump-and-treat option to extract that from the groundwater is a much higher level of cost than what you see for our preferred alternative extracting it from the vadose zone. And the statement that no one will die, well, we don't know that.

AUDIENCE: We don't know.

MS. LIENTZ: Right.

AUDIENCE: Neither, ma'am, do we know that 75 years from now, the technology will have improved sufficiently to make the pump-and-treat option altogether more economically feasible.

MS. LIENTZ: The other thing I wanted to add was that with the preferred alternative, the one good thing about -- a couple good things about that, but it is a phased alternative, so you're not already dedicating the highest amount that you see there. You're starting at a smaller amount of $12 million, and if for some reason that there are more costs that you need to add to enhance the system, then more costs can be added. But the phased approach is a very cost effective approach.

AUDIENCE: Is that -- so the decision you're making now is the $12 million decision, not the $60 million?

MS. LIENTZ: Our preferred alternative is $12 million, but that's not -- that's why we're here today.

AUDIENCE: That's for two years.

MS. LIENTZ: Right.

AUDIENCE: So that's the question. Are you making a $12 million decision now or the $32

million decision now?

MS. KROUPA: The twelve.

AUDIENCE: So you'd have to do this again to go for the four years and six years?

MS. LIENTZ: We have a lot of confidence that $12 million in a two-year time frame will do the trick.

AUDIENCE: Okay. And then I'll ask the question again. How many lives are you going to save spending $12 million?

MS. LIENTZ: The potential there is still there. We'll be hopefully getting back into this risk range if we are -- if we implement the preferred alternative, we'll be dropping into this risk range here by extracting a certain number of --

AUDIENCE: I don't want to be argumentative, but she just said that if you do nothing, nobody's going to die.

MS. KROUPA: I should retract that. I mean, we --

AUDIENCE: She said probably.

AUDIENCE: Probably.

MS. KROUPA: Probably.

AUDIENCE: I'm sorry.

MR. JENSEN: We're talking about risks.

AUDIENCE: Okay. So do we have an EPA-defined risk guideline on number zero? Did you develop a risk on that?

MS. LIENTZ: Yeah. This.

AUDIENCE: If you did nothing?

MS. LIENTZ: If we did nothing, those arrows there.

AUDIENCE: Six in ten thousand.

MS. LIENTZ: Two in ten thousand.

AUDIENCE: Two in ten thousand, so --

MS. LIENTZ: Six in a hundred thousand.

AUDIENCE: Six in a hundred thousand. Two in ten thousand. Okay. My problem.

So that's $14 million. That's $7 million apiece. That's also --

MR. JENSEN: Wait just a second. Please, if you have comments, that's great, but just recognize that we would like to hear those comments during our comment period too.

AUDIENCE: I didn't mean it to be a comment. I was just curious.

MR. JENSEN: This first, and then you, and then in the back.

Ma'am, yes.

AUDIENCE: I was just wondering how

much groundwater contamination do you expect even if you do do the vapor extraction?

MS. LIENTZ: I know the answer. Do you want me to go?

MS. KROUPA: Go ahead.

MS. LIENTZ: If we do the vapor extraction technology, we will have still contamination within the groundwater, but it will be below the maximum concentration. So it still would be below the state and federal drinking water standards if we take action.

AUDIENCE: Amy, is that what your premodeling suggests that we would have -- how many years was it?

MS. LIENTZ: Excuse me? The modeling, results of the modeling?

AUDIENCE: Is that premodeling that gave you those calculated results of X amount of years you'll have groundwater contamination?

MS. LIENTZ: Right.

AUDIENCE: So possibly you may not either, even though your modeling suggests it. If you get in a two-year project, you may not get any.

MS. LIENTZ: I think I might have Jeff Sondrup, who happens to be here from EG&G -- he's the

person that did the fate and transport modeling.

MR. REUEL SMITH: Could you first identify what the question is that Jeff will be addressing just again?

AUDIENCE: Does your premodeling suggest for sure that you will have contamination, what was it, 70 years? What did she say? I didn't hear the number of years.

MR. SONDRUP: I'm not sure what you mean by premodeling.

AUDIENCE: Well, from the data you have. You don't have any groundwater contamination now, correct?

MR. SONDRUP: Well, we have contamination.

AUDIENCE: Oh, you do.

MR. SONDRUP: It's below drinking water standards.

AUDIENCE: But it's below standards?

MR. SONDRUP: Yes. The vapors and the contaminants have reached the aquifer.

AUDIENCE: Oh, I see. I didn't catch that.

MR. SONDRUP: We are detecting them in groundwater. And what the modeling results show, if

we do nothing, the bulk of the contamination will continue to move outward and downward and at sometime in the future reach the aquifer and continue to enter the aquifer such that the contamination in the groundwater will exceed those federal drinking water standards in the future.

AUDIENCE: Okay. So your modeling suggests that the MCL levels will go above five?

MR. SONDRUP: Yes. We predict that it will peak near the SDA at approximately 125 parts per billion, which is 25 times drinking water standards.

AUDIENCE: That's with no action?

MR. SONDRUP: Correct.

MR. JENSEN: Sir, did you get your question answered?

And then in the back.

AUDIENCE: I wanted to make a point following his statements that this is a resource as well. The No Action alternative is not just cost of lives, but it's the cost for the loss of a resource. Now, he and I are of similar age, and ecologically we're done for, so it doesn't matter.

But I don't know about him, but I have some grandchildren that I'd like to be able to participate in some of these resources.

MR. JENSEN: Thank you. I wish you'd save those for the comment period or repeat them.

Yes, sir.

AUDIENCE: Is there any idea what percentage of the original organic solvents that were dumped or otherwise entered the ground, what percentage will be recovered through the vapor vacuum extraction process?

MR. SONDRUP: Do you want me to go ahead?

MS. LIENTZ: Yeah, go ahead. That's fine.

MR. SONDRUP: Of the original amount buried in the SDA, modeling results show that most of it has been vented or at least the atmosphere by the vapor migrating up to the surface to the air. And, therefore, once in the vadose zone, it's just a fraction of the original inventory. Therefore, we have estimated that we need to reduce the concentrations in the vadose zone at approximately the 110-foot level where the bulk of the contamination exists now to I believe about --

MR. CHRIS HAMEL: Twenty to sixty parts per million.

MR. SONDRUP: -- 20 to 60 parts per

million. And if we do that, if we reduce it to that level, then our modeling results show that whatever contamination does reach the aquifer will not cause concentrations in the groundwater to exceed drinking water standards.

MR. JENSEN: Any other questions?

AUDIENCE: I have one.

MR. JENSEN: Please.

AUDIENCE: Where's the first place starting from the point of the well, okay, going in any direction -- or excuse me -- going downstream in the aquifer, where's the first place that there's a potable water well that draws out of that aquifer and what would the particulate count be there in 70 years?

MR. JENSEN: I don't know if this helps at all, Jeff.

AUDIENCE: I mean, is Twin Falls the first place they have a well?

MR. SONDRUP: You want to know where the first groundwater well is that supplies drinking water?

AUDIENCE: Yeah. And what would the particulate level be there in 70 years if you did nothing?

MR. SONDRUP: I don't know where the nearest well is at the -- I know that it's not on the INEL. I'm talking about downgradient. There are wells upgradient or upstream of the SDA facility where they pump groundwater.

AUDIENCE: That wouldn't make any difference, would it?

MR. SONDRUP: That's right. So downgradient, the nearest one would have to be off site right now. And so far, the contamination has not reached there. It's predicted, though, in one of our alternatives, if there was a well at the site boundary --

AUDIENCE: 5,200 meters.

MR. SONDRUP: That's correct -- that we would exceed a safe risk base level. And then the other alternative was that after a hundred years or after the institutional control period, we assume that it's possible someone could come on site and put a drinking water well anywhere on the site or right near the most contaminated area.

AUDIENCE: I was going to say something, but it was a comment so I'll save it for later.

So that I understand, the answer to

both questions are the EPA doesn't know? Is that the right answer?

MR. SONDRUP: I think we know where the nearest --

AUDIENCE: You don't know where a well is and you don't know what the particulate --

MR. SONDRUP: I think we know, but I don't know personally.

MS. LIENTZ: We don't have it off the top of our heads, but I would ask you to please make that comment for the record because we will get back to you answers on that.

AUDIENCE: Okay. So I've got to ask that again?

MS. LIENTZ: Sure. Yeah, we'd like you to.

AUDIENCE: What's the K value of that system?

MR. JENSEN: K value. Go ahead. Pick your contentment.

AUDIENCE: How many feet per day?

MR. SONDRUP: Of the --

AUDIENCE: On the compliance system.

MS. MEYER: Would you define K value?

AUDIENCE: Transfacility, how fast it

goes through the -- how fast it goes, the water.

MR. SONDRUP: Are you talking about the groundwater? Under the SDA, it's about four to seven feet per day.

AUDIENCE: That's pretty fast.

MR. SONDRUP: Which is quite fast.

AUDIENCE: Although at Hanford, we had a thousand at some places.

MR. SONDRUP: You're close to the river.

MR. JENSEN: Any other questions? By the way, these -- we'll go now into our formal comment period. But after the comment period is over, while the other team is setting up for the other project, these folks will be here and you can talk to them one-on-one if you'd like, so we'd like you to take the opportunity.

AUDIENCE: Is this the formal comment period?

MR. JENSEN: Let's just wait a minute. Any more questions first before we --

AUDIENCE: This gentleman's been trying to ask a question.

MR. JENSEN: Sure.

AUDIENCE: Well, the question came up a

while ago what percentage of it's been recovered, but not all those drums that have been put in there leaked.

MR. JENSEN: Okay. Did you hear that?

AUDIENCE: So maybe only one percent leaked or maybe a tenth of a percent leaked.

MR. JENSEN: Okay. Did you hear that, Jeff?

MR. SONDRUP: Yeah. I'd like to address that. The comment was that not all of the drums buried in the SDA that contain the organics have deteriorated to the point that they could leak or the contaminants could be released from those drums.

We have done several what we call drum retrieval studies at the SDA, and we've exhumed or dug up drums that have been buried for six years, ten years, twenty years, and we've examined the condition and the percentage of drums that remain intact and the percentage that have deteriorated. Our numbers show that after about twenty years, approximately 80 percent of the drums have deteriorated in some fashion. Either they're completely deteriorated and corroded or they may have small holes or leaks.

So what that indicates -- and let me

say that these contaminants have been buried for over twenty years. It's going on almost thirty years since these were placed in there, so it's safe to assume or we assume that at least 80 percent or 90 percent of the drums have deteriorated and released their contents or part of their contents into the ground.

Does that answer your question?

And so what we're addressing are those contaminants that have escaped, which we feel comfortable is the bulk of the contamination.

MR. JENSEN: Does anyone need to take a break before we go to the comment period?

Okay. If you would please, then, as we go into this comment period, will you please stand and either speak very loudly or come up to the front so the court reporter can hear you, and would you please state your name so that we are sure when we do the Responsiveness Summary, we can make sure -- you can make sure that the comment that you gave is being addressed appropriately.

So we'll go ahead and open our comment period now. Again, we won't be responding. We'll just let you give any statement you would like. I would ask you please to keep it to five minutes or

less so everyone can have a turn. And do we have any state legislators or anyone here? Did anyone sign up?

Okay. We'll just -- perhaps if we could just have you raise your hands and I'll pick you and we'll have you just take turns and give your comments, then.

We're excited to have interest. Don't be shy.

MR. BOB BELVEAL: Well, I'll start. My name's Bob Belveal. For the rest of you, I'm a native of Idaho, and I went to reactor school out there.

It doesn't -- it doesn't make sense to me for you folks to stand up here and justify spending my tax dollars doing this for the purpose of saving lives when you don't know where the lives are that you're impacting. I don't think you've done your homework.

MR. JENSEN: Thank you.

Yes, ma'am.

MS. NICOLE LEFAVOUR: My name's Nicole LeFavour. And I'm concerned that possibly the money being spent is perhaps -- I guess I should phrase this better. Perhaps you're being cautious with the

money you're spending, and I guess I just want to make sure that there isn't the possibility that you need to do perhaps the $59 million treatment. I hope that you will err on the side of the cautious. And I think it looks good.

MR. JENSEN: Yes, sir.

MR. JOHN ANDERSON: I'm John Anderson. I'm a local consultant from Boise, and I'm also an Idaho native. Not from Boise, however. I'm a Vandal, if that makes any difference.

I really feel that your vapor extraction is a correct method. I'm very familiar with vapor extraction and this is probably as cheap -- you're going to get the best bang for your dollar right there.

MR. JENSEN: Anyone else? Don't be shy.

Yes, sir.

MR. FRITZ BJORNSEN: Fritz Bjornsen, Boise. I guess my concern would be simply that during the process, all care be taken that the monitoring wells and the vapor vacuum extraction well be properly capped and monitored to prevent increased migration both of the solvents and potentially other problems -- other things existing in the soil at the

RWMC that might find an easy pathway to the aquifer through the wells that are being dug.

MR. JENSEN: Thank you. Anyone else? Going once.

Yes, sir.

MR. WALT HAMSON: It looks to me like you've done a pretty thorough job.

MR. JENSEN: Could you state your name first, please?

MR. HAMSON: Walt Hamson, resident of Boise at this time. And it looks like there's a lot of thorough work done here. But we all know that when we get into all these theories and calculations and all, that can change over time.

Personally, it seems to me that the preferred alternative looks pretty reasonable, as long as you hold kind of close to that twelve instead of the thirty-two.

MR. JENSEN: Anyone else?

Okay. Let me just say one thing. And please remember, if I could borrow this, this particular project, the comment period ends on April 30th. Is that correct?

So if you have any other comments you want to submit in writing, again, remember you can do

so on this comment page.

So one last time, any other comments before we close?

Okay. Thank you. We're going to take a short break now while the Naval Reactors team sets up their presentation. So you can either get a drink of water or get a breath of fresh air, whatever you'd like. Feel free.

(Recess taken.)

MR. JENSEN: Okay. We're going to start on the second project tonight, and we'll go through it very similar to what we did the first one. However, you have to listen to me for just another two minutes.

There are a couple of new concepts that we'll be introducing tonight in conjunction with the Naval Reactors Facility discussion. The first of those is the concept of presumptive remedies. And what that term means is that we've been now a little over ten years, ten to fourteen years since the Superfund law's been in effect. And what has been found is that similar types of sites very commonly end up being cleaned up the same way.

And in the interest of spending fewer dollars on studying, sampling, and assessing and

characterizing sites, and in the interest of moving those dollars to actual cleanup, one of the concepts that the Environmental Protection Agency has come up with is that of -- when a certain kind of site is generally cleaned up the same way every time, unless there's something very unusual about that site, it makes sense to move right to that cleanup. And so that's a concept that we'll be talking about tonight.

The other is, this is also our third year that we've been working under the Federal Facility Agreement at INEL. And when we started, we had 400 sites approximately that we were going to assess at INEL. We've gone through I think about half of those now. Many of them were small sites and the investigations were quite limited, some a little more extensive. But as we finish with those limited investigations, we're now getting to the point where we're ready to make decisions on those as well. So from now on, if you come and listen to our presentations, we'll probably be including some of these limited investigations in with the larger investigations and letting you see what work has been done on those smaller sites and formalizing our decisions on those as well.

So those are two concepts that will come up tonight as our presenters will talk about this second project. So with that, I'd like to introduce first Dary Newbry. Dary is with the Naval Reactors Office with the Department of Energy, and he'll be the first presenter, and then he will introduce Rick Nieslanik from Westinghouse as well.

So, Dary.

MR. DARY NEWBRY: Thank you, Nolan.

First I'd like to thank everyone for coming tonight and welcome you to the first public presentation for environmental cleanup at the Naval Reactors Facility.

As Nolan mentioned earlier, we have two cleanup investigations we're going to discuss tonight, one being the Industrial Waste Ditch and historic landfills that are at the site. Before we get into the discussion of those investigations, I'd like to give you some background first.

The Naval Reactors Facility -- and we'll refer to it as NRF throughout the night. NRF was first established in 1949 as a testing site for the United States Navy Nuclear Propulsion Program. Since then, NRF's mission has been twofold. It's been a training site for the Navy and also used for

research and development.

NRF is located in the southwest -- or the central-west portion of the INEL, which as we said earlier is approximately 50 miles west of Idaho Falls. NRF is operated and contracted out to Westinghouse Electric Corporation.

The major facilities at NRF consist of three primary training facilities, S1W, A1W, and S5G, and a fourth facility which is known as the Expended Core Facility, ECF.

S1W -- and these acronyms are no secret. I'll give a little history behind them. S1W stands for -- S stands for submarine, 1 is the first design, and W is for Westinghouse. So S1W was the first naval reactor designed specifically for the Navy. It was developed and actually built and constructed. This was the model prototype used in the first nuclear-powered submarine, the USS Nautilus. It was built in 1952 and operated for nearly four decades when it was shut down in 1989.

The second prototype built or the second training platform or model prototype, the A1W, A stands for aircraft carrier, first design, Westinghouse plant. A1W was built in 1958. It was the first model reactor plant used on an aircraft

carrier and was designed and developed and used for the USS Enterprise, the first nuclear-powered aircraft carrier.

The third training platform is S5G, submarine, fifth design, General Electric. S5G was constructed in 1965. It is currently operating today. It is scheduled for shutdown next summer. It is now the only operating reactor at the Naval Reactors Facility.

I failed to mention that A1W did shut down this past January. It's no longer operating.

So currently we have one operating reactor. That's the S5G prototype.

The Expended Core Facility is still an operating facility. It receives, inspects, and conducts research on Navy nuclear spent fuel and support components and various materials that we use in our plants.

The reason we're doing some of the investigations tonight are as a result of the support systems that we use in these plants. NRF over the years has had fifteen hundred to three thousand personnel assigned to the facility as a whole, so we're typical to that of a small community. And because of that, we have certain waste processes that

are generated with small communities. We have industrial wastewater, sewage wastewater, and just standard routine garbage. And because of that, we have two specific areas of concern which are going to be covered in these investigations -- or which were covered in these investigations, the Industrial Waste Ditch and historical landfills. And that'll be on another map I'll show you later on, or Rick will.

The Industrial Waste Ditch has received wastewater discharge from gutters, snowmelt, rain, and also from secondary plant processes throughout the prototypes and the facilities at NRF since we don't have an ocean out there in the desert. These submarines and the aircraft carrier prototype were designed to operate like a ship at sea. Ships at sea use sea water systems to go through and cool various support components and auxiliary systems, not the reactor directly. So these support sea water systems go through and cool components, and then it's discharged to the ocean. Well, instead of us discharging to an ocean, we have discharged that water to what's known as the Industrial Waste Ditch. Because of those past practices of discharge, various organic and inorganic constituents have been discharged to the ditch.

No radioactive water or effluents have been discharged to this ditch. This is not a radioactive discharge ditch. There are other areas where we did specifically discharge radioactivity or radioactive-processed water which we will be covering in later investigations under the FFA/CO, the Federal Facility Agreement.

The other investigation area we'll be covering tonight are historic landfills, and those landfills, they're just garbage dumps that we used at our facility up through the mid-seventies until they established the Central Facility Area landfill which is located on the INEL. We had our own landfill sites and we took our cafeteria waste, dumped it there, office trash, anything that you might find in a small community or municipality.

With those two areas, the Industrial Waste Ditch and the historical landfills, I'd now like to turn it over to Rick Nieslanik. He's the Westinghouse Electric Corporation Waste Area Group manager for NRF, and he'll give you a little more discussion in detail on our Proposed Plan.

MR. RICHARD NIESLANIK: Thanks, Dary.

The Industrial Waste Ditch will be the first topic of conversation. After that, I'll pause

for some questions, and then I'll move on to the landfill areas.

As Dary mentioned, the cooling water from the various plants and operations at NRF was collected, and still is collected, in a network of pipes and open channels. It's channeled over to the west side of the site, and then it travels in a culvert to the outfall of this ditch.

This ditch, as you may guess, is an old streambed. The water's been discharged there since approximately 1953. During that time, the water contained solutions with trace amounts of things such as chrome, mercury, silver, oil, and other impurities.

The sediments in the bottom of this ditch were periodically dredged and placed on the banks of the ditch, and the sediments currently in the bottom of the ditch and the soils that were dredged and placed on the banks were the primary subject of the investigation.

The water has -- over the years, the water has flowed in the first two miles of this ditch. It extends on out another mile past that, but only the first two miles have routinely received water. Currently, due to operational changes, plants

shutting down, water only flows in the first mile of the ditch.

As I mentioned, those dredge pile soils, that was the primary focus, but we also wanted to look at the migration of any contaminants that we may have found in there, and that was the primary focus of our sampling effort. Samples were collected from the ditch sediments, and from the dredge piles in a systematic pattern along the length of the ditch.

We also wanted to look at the migration, so we drilled a series of boreholes in a line perpendicular to the ditch at several locations along the length of the ditch. That gave us a picture of how the contaminants have already migrated and an idea of the types of soils beneath the ditch so we can predict how they might migrate in the future.

We also sampled groundwater. The Snake River Plain Aquifer is monitored, as well as any perched water or groundwater we found during our drilling operations. All of the samples directed from this groundwater showed no contaminants above the drinking water standards. We also ran predictive models similar to what were mentioned earlier with

the other project to predict how the contaminants that we found would migrate.

We assumed that all the contaminants found in the sediments and in the dredge piles were released from the soil and migrated to the aquifer. Even with that release of contaminants, we still predict no contaminants in the aquifer in the future that would exceed the drinking water standards. The soil samples that we collected from the dredge piles and from the sediments identified eight contaminants that we were concerned about, chrome, mercury, silver, nickel, zinc, copper, lead, and barium. All of those are naturally-occurring materials. However, we found that at certain locations along the ditch banks, and sediments, that the concentration of those natural-occurring materials exceeded what we would expect to find in the soils in the INEL or in southeastern Idaho or around -- specifically around NRF. Therefore, those contaminants were what were the focus of the risk assessment.

The risk assessment process, as we've discussed earlier, concentrates first on estimating the exposure that an individual could receive from the contaminants that are present. Currently, there is no access for a resident along this ditch.

However, in assessing our exposure, we assumed that someone in the future could in fact build a house on the bank of the ditch.

We also looked at an agricultural resident in the future who farmed the land around the ditch and grew fruits and vegetables, raised dairy products and cattle in the area of the ditch. And we looked at a worker individual who could be exposed to the soils and sediments.

As part of this exposure estimate -- and I want to talk about this briefly because the question the gentleman over here asked earlier -- we assumed that these people would live in this area for thirty years, that they would be exposed on a daily basis to these soils, these sediments, every day for that thirty-year period. And that's the typical process for a risk assessment. You don't look at a short-term exposure, but you look at rather a long-term exposure. And the risk values that I'll talk about later on do represent that type of a conservative estimate, long-term exposure.

We looked at three different pathways. We looked at inhalation of dust and vapors. We looked at absorption through the skin due to direct contact with the soils and sediments. And we looked

at ingestion through fruits and vegetables, meat and dairy products, and groundwater.

As Nolan mentioned earlier and also brought up in the last presentation, carcinogenic risks and noncarcinogenic risks were evaluated. That's based on the contaminants themselves, and they're categorized. Their toxicity is categorized as being one or the other, or both in some cases.

The highest carcinogenic risk we found was one in seventy thousand. And that's through an inhalation pathway of dust, wind-borne dust from the dredge piles. As I mentioned earlier, what this one in seventy thousand represents is that if seventy thousand people were exposed to this level for this length of time, you would expect to see one additional case of cancer above the national average.

The noncarcinogenic risk value that we calculated was 1.3. That was based on a pathway of ingestion of fruits and vegetables grown in the dredge pile soils. That's assuming that all of the dredge pile soils were used to grow those fruits and vegetables. We also looked at a situation where a person grew those fruits and vegetables not in the general soils, but only in those localized areas that

had the highest concentrations. In that case, we had a hazard index of 2.2.

Again, a hazard index of 1 represents with a high degree of certainty that no adverse effects -- no adverse health effects would be seen by any member of the population. When you have a hazard index slightly above 1, such as we have here, it still has the likelihood that no one will receive any adverse health effects. However, the certainty level now is a little lower.

Based on the information from this risk assessment calculation and from the samples that were collected, the three agencies are proposing no action. The data collected and the calculations made give no indication that there is a need for action at this site and, therefore, the proposal before you today is that no action be taken at the Industrial Waste Ditch at the Naval Reactors Facility.

That's the end of that portion of the presentation, and I'll handle some questions.

Yes.

AUDIENCE: Now, you say there were no radionuclides discharged into the ditch and no evidence of any at this time.

MR. NIESLANIK: The ditch, the sampling

evolutions that I've talked about here were a short duration sampling period where we did a very systematic pattern. The ditch water and the sediments themselves have been sampled and analyzed thirty years roughly, have had routine samples taken over that period of time, and they have not indicated at any time along there that there were any radionuclides or contaminants that needed to be addressed.

A lot of what we did in our sampling program was to look at all this old data and use that to help us determine what we needed to look for, as well as where we needed to look.

AUDIENCE: How did you deal with the metabolic fate of mercury?

MR. NIESLANIK: We assumed that -- mercury is a good example because when we do the risk calculations, we have to make certain assumptions. You have to assume -- you know something about the form of the contaminant in the soil, and then you have to make some assumptions. Mercury is a good example.

We found mercury. We could not -- we did not analyze that to see just exactly what form that mercury was in. We had to assume that it was

the worst most carcinogenic -- or the most hazardous form, which is methylmercury. So all the calculations are based on organic mercury or methylmercury. That could artificially inflate these risk values, and that's part of what that uncertainty I talked about before is.

You calculate a hazard index that's based on your assumptions. If you've made very conservative assumptions, that helps offset that uncertainty that you have built into your equations because you have a conservative value to start with.

AUDIENCE: Did you use the pharmacokinetic model of mercury through the food chain in the computation of your risk?

MR. NIESLANIK: We took the biokinetic -- or the biotransfer -- published biotransfer factors for mercury. We did not look and say, okay, this is methylmercury and it's going to move this way. We took mercury as a whole and said it moves through the food chain this way, and then at the end assumed it was all methylmercury for the risk calculations.

So we didn't look and say I have methylmercury in the soil. That methylmercury moves not as rapidly through the food chain or it is

changed in the food chain. We assumed it goes all the way through the food chain as methylmercury. The end product received by the receptor or by the individual is what we assumed to be the methylmercury and used that toxicological data at the receptor point.

AUDIENCE: Yes. What is the life of these contaminant metals? I mean, do they ever break down or disintegrate at all?

MR. NIESLANIK: They do change form, but they do not disintegrate and break down. They're natural-occurring. If you go dig soil -- lead is an example. There are lead mines up by Leadore. Chrome, there are chrome mines. They are natural-occurring.

And the levels that we found here really were not significantly above background on the average. However, at certain locations, they were significantly above background. And so we had to say -- and the presumption is that metals do not break down, that they will stay in some form. They'll change form, but they'll stay in the environment through the life.

MS. LINDA MEYER: You didn't explain that the top arrow is the hot spot. We looked at

kind of an average if you've kind of lived anywhere, and then we looked at if you've lived at the hot -- where it's the worst concentration. So the top arrow's the worst concentration.

MR. NIESLANIK: I have one more back here first. Go ahead.

AUDIENCE: Was the ditch affected at all by the big flood that they had out at the site a number of years back?

MR. NIESLANIK: '83, '84?

AUDIENCE: I forget what year that was, but there was quite a bit of flooding. I don't know if it affected the naval reactor area or not.

MR. NIESLANIK: We have no record that it did. I personally wasn't there at the time.

We did go back and look through all the records to when we started this project to see what things affected the ditch. We didn't see any records, and you don't see any obvious signs in the area that that flood did. So as far as we're concerned, no, it did not.

AUDIENCE: The spring of '83.

MR. NIESLANIK: Yeah. That big flooding event was down at the south of the SDA.

AUDIENCE: There were other floods in

'60 and '62.

MR. NIESLANIK: Yes, there were other floods as well. The low area around there -- by the way, the Big Lost River runs through here like this. The lowest area on the INEL is this area over in here; is that correct? And that's where that flooding occurred.

AUDIENCE: That was mainly due to rapid snowmelt.

MR. NEWBRY: And it was due to increased flow through the Big Lost River there. And up until last year, there had not been any flow in the Big Lost River since '83, since that flood period. Last year we did have flow in the Big Lost.

MR. JENSEN: I know if you look at the hundred-year floodplain maps, this is one facility that I've worked on projects in, and even here at TRA, it's not quite within the hundred-year floodplain, so I would assume that that's well out of it.

Now it's your turn.

AUDIENCE: In those hot spots that you found the higher levels of the heavy metals, if they were present in sulfates, they'd be almost in the form of solubles. If they were in nitrates, they

would be available. So what you've calculated are some of the worst-case scenarios.

MR. NIESLANIK: The point that he brought up is, I mentioned earlier, the form of those metals. In the fate and transport modeling that we did, the migration of those metals, you have to make some assumptions about what form they're in. And he mentioned sulfates. If you assume that they're sulfates -- and in fact, some of them were deposited as sulfates -- they migrate more rapidly. But once they're in the soil and have been adsorbed onto the soil particle, their less likely to be released.

However, we assumed that they were released because we didn't -- all of our data -- whenever you do an environmental investigation, your data is imperfect. You always have some uncertainty, so you try to err on the conservative side so that even if you're wrong, you're still protected. And that's this uncertainty issue again with the hazard index.

Any other questions?

Okay. I will move on to the second project.

Again, I want to repeat the fact that these were two completely separate investigations.

The first one on the ditch was done under one process called the Remedial Investigation Feasibility Study.

The second project I'm going to talk about was done -- started out as saying this is a limited investigation. As we got into it, we realized that we wanted to take this to a Record of Decision, and so we have coupled it with the Industrial Waste Ditch for these presentations.

This project looked at nine areas around NRF that were suspected of possibly containing buried waste, municipal waste. During the initial scoping of this project, five of these were visually inspected, looked at old photographs, interviews with ex-employees, and we determined that they did not have any buried waste. There was nothing buried in any of those areas. The agencies are recommending that these sites be no action.

The investigation centered on these four sites there, and I'll talk something about what we did for that investigation in a moment. As a result of that investigation, one additional site, based upon the data we collected and the way it was evaluated and projections of what went in there and contaminant fate and transport models that we did, the agencies are recommending no action for this site

also.

The three remaining sites are being recommended for an action. These are municipal waste landfills. They've received the same types of wastes that you would expect to find in any community landfill anywhere in the country, the one here in Ada County or anywhere else. They receive things such as construction debris, cleaning agents, scrap metal, kitchen waste, paint waste, paper waste, and household and industrial chemicals. Those are the types of things that went in there.

Nolan mentioned earlier the concept of a presumptive remedy, that is, using remedies selected in the past at similar sites coupled with site information to select the remedy for a new site. That is the process that we are recommending for these landfill sites.

The presumptive remedy for land -- for municipal waste landfills, the EPA, in order to determine that, looked at the list of all of the municipal waste landfills on the National Priority List. There were some three hundred of those. They selected a random sampling of those and evaluated the remedies selected for each of the units in that random sampling.

They found that every single one of the landfills in that random sampling used containment of the wastes in place as a presumptive remedy -- or as a remedy, I should say. And therefore, the EPA has established that containment of landfill materials in place with some type of cover and then protection of any groundwater that's in the area is the presumptive remedy for municipal waste landfills.

As I mentioned, we believe that the waste buried at these landfills is in fact the same type of waste, that municipal waste. However, in the early stage of this project, we decided not to sample directly into the landfill contents, the reason being is that with landfills, they're extremely nonhomogenous or heterogenous. That is to say, if I take a sample at this location, I may get paint waste, but that's not necessarily representative of what's really in here, and it becomes very costly and very nearly -- essentially impractical to fully characterize what's in that landfill.

Presumptive remedy concept says rather than waste money on that sampling effort, let's spend that money on the action. And we already know what the action should be because of all of these others have selected this same remedy, this same action.

At NRF, in order to determine what was in the landfills, we looked at records, did an extensive record search. However, no records were kept of what was actually buried in these landfills in the fifties and sixties. In 1970 and beyond, there were records kept of what was shipped down to the Central Facility Area landfills.

The processes at NRF have not changed over the years. It's always been a training facility and a research and development facility. That mission hasn't changed. And therefore, the waste processes -- the processes that generated these wastes haven't changed. We then said that the waste buried, based on the records from '70 to '80, are similar to what would have been buried from 1953 to 1970. From that, we estimated what was in the landfills. Rather than spend the money to actually characterize that, we estimated it and will concentrate spending the money on actually implementing the remedy.

Within the confines of the presumptive remedy, three alternatives were evaluated. A No Action alternative, which consisted of keeping the landfill contents in place, accepting the existing cover, and performing no sampling or monitoring in

the future.

The second alternative was to keep the landfill contents in place again, to place a native soil cover over the top of the landfill, to do groundwater and soil gas monitoring for an extended period of time, to survey the area and implement land use restrictions. And the estimated cost of this is $2 million. The estimated maximum cost is $2 million. I'll emphasize that because I know I'm going to get a question.

The third alternative looked at was containment with a single barrier cover. The difference between Alternative 2 and 3 is primarily the cover design. The same monitoring design, the same land use restrictions apply, and the cover, however, has an engineered clay cover rather than just native soil.

In evaluating these alternatives, we established objectives for the remedial action. The objectives were that since we really didn't know what was in the landfill, we have an objective to prevent people from accessing that, from digging into it. We also have an objective to protect the groundwater. We also have an objective to reduce the mobility or the infiltration of water into the landfill that

might cause whatever contaminants could be there to migrate. And then the fourth objective was to meet the relevant, appropriate, applicable requirements associated with the site.

Based on the evaluation of these alternatives against those objectives, the agencies are recommending containment in place with native soil cover.

Alternative Number 1 was eliminated because it doesn't meet those objectives. The existing cover may or may not reduce the mobility, the migration of those contaminants, and there's no sampling or monitoring to ensure that nothing is making it to the aquifer.

Both of these two alternatives do in fact meet those objectives. The primary decision factor between these two is cost. There are some other minor ones, but that's the primary one in the selection process.

I've talked about two completely separate projects here. I want to make the distinction. The first one, the Industrial Waste Ditch, the agencies are recommending no action. On the landfill areas, the agencies are recommending no action on six of the sites, and they're recommending

the preferred alternative mentioned here on these three sites that were confirmed to contain buried waste.

I'd now like to open it up to any questions you might have really at this point on either project in case something else has come up. Yes.

AUDIENCE: For the number one, No Action, if the existing cover is not native soil or native vegetation, what is the existing cover?

MR. NIESLANIK: It's the thickness of the cover that's the issue. And the contour -- let me place this back up here for just a second.

One of the things I really didn't discuss in detail is the design of the cover. The cover, in order to decrease the amount of water that infiltrates it, needs to be shaped so that the water that falls on the top will run off. Even if it's native soil, if it's contoured properly, the water will drain away and not infiltrate.

So the soil that's there -- in fact, in one case, the cover consists of some debris, chunks of concrete, chunks of asphalt, those kinds of things, and it's not contoured and shaped. There are low spots, those types of things.

So in designing and installing this cover, we know what the thickness is now and will uniformly ensure that it is at least two feet, I think is the requirement, and that it is shaped so that the water will run away without being too steep to control the erosion. And that's the purpose of the vegetation is to help control any erosion.

AUDIENCE: How many acres did you say were included in the four or five sites?

MR. NIESLANIK: This area is approximately one and a half acres. This area, although it looks quite large, only this lower portion actually is the landfill. Total area is probably about three acres.

AUDIENCE: And to go back to the ditch, you're saying you could grow tomatoes on that ditch bank and it wouldn't pick up any of those weird-sounding things?

MR. NIESLANIK: It would pick them up; however, not in concentrations high enough to create a significant risk. And primarily, the gentleman mentioned earlier, mercury was the contaminant, mercury and zinc, which people take zinc as a mineral supplement. But those were the two contaminants that make it through the food chain in significant

quantities to create any risk, any significant risk. And even then, that risk is, like I said, 1.1 to 2.2, depending on how you look at it.

AUDIENCE: They'd be real heavy vegetables.

MR. NIESLANIK: Zinc, by the way, is absorbed through the food chain quite readily. A high percentage of zinc in the soil does make it into the food chain.

Yes, ma'am.

AUDIENCE: Yes. You're talking about residents living there in thirty years. Am I to assume, then, that there are plans to shut down the entire INEL since parts of it has disbanded?

MR. NIESLANIK: Not at all. We have to make some assumptions of what could happen. None of us have a good enough crystal ball to say that in thirty years, the INEL will be closed down or that a particular facility would be. We had to pick a time frame, and that's what we looked at.

MS. MEYER: And part of it, too, we need like a baseline to compare these risk numbers to. So our baseline to put all the equivalent risks has been the future residents at INEL in thirty years, just so we have a basis to compare risk.

MR. NIESLANIK: Yes, sir.

AUDIENCE: Obviously, though, the nature of the mission of the Navy at INEL has changed and will likely continue to change. Whose responsibility are the landfills and the ditches? Is it the Navy's responsibility? Is it Westinghouse's?

MR. NIESLANIK: The responsibility is the Department of Energy's. The naval reactors program that we mentioned is a joint venture between the United States Navy and the United States Department of Energy. The land belongs to the Department of Energy.

AUDIENCE: Okay. So they will actually continue to oversee the monitoring and this sort of thing?

MR. NIESLANIK: The naval reactors program will as long as they're using that land, and then if they -- if the naval reactors program should leave, then we'd revert to the other DOE operations office, but still DOE. I think that's the important thing, it is Department of Energy.

AUDIENCE: And then the question that goes with that, is this DOE-funded or is this coming out of Navy budgets?

MR. NIESLANIK: All of the INEL

remediation actions are DOE-funded in one form or another. They're not Superfund-funded and they're not EPA-funded. So DOE is the funding agency. The naval reactors -- again, it's the Naval Reactors Office of the Department of Energy, so it is still the same people.

MR. NEWBRY: I need to clarify it a little bit. The funds that are used for our remediation at the Naval Reactors Facility come out of our operating budget or operating facility. We don't have set aside separate funds just for cleanup. The Division of Naval Reactors of Department of Energy has an operating budget. We are using those funds for remediation efforts at the NRF.

AUDIENCE: Taking your logic about being the Navy's responsibility now, then the Navy would hand it off to the DOE, and using your model family, do I then presume that the land, the DOE would hand off to the homeowner? Come on, guys.

MR. NIESLANIK: No one knows what the use of this will be. Land -- I mentioned in the case of the landfills, land use restrictions will be implemented. No homeowner will be able to come and build a home on that landfill and, therefore, no, it will not be handed off to a homeowner because they

will not be allowed to buy that land. Land use restrictions will be implemented.

I think that's an important fact on the landfills because, like I said, we really don't know exactly what the concentrations of everything in this landfill are.

AUDIENCE: But the DOE could hand it off to the guy that buys the side of the ditch?

MR. NIESLANIK: Yes, because we're saying the ditch is no action. There's nothing there. If he goes and builds a house there, that's okay because there is no risk. Minimal risk. Saying no risk is misleading.

Yes, ma'am.

AUDIENCE: Okay. What studies -- or have there been enough studies done that you have great confidence in that thickness and shape and design of soil cover?

MR. NIESLANIK: The design of the cover is not complete. At this point we are saying that this is our proposed plan. The next step, once the ROD is signed, the Record of Decision is signed, is to go do that design work.

There is guidance that says this is what a cover should look like. There are regulations

that say the permeability of that cover has to be within some certain numbers based upon the amount of rainfall and other permeability below the landfill, those kinds of things. So that design phase is not complete yet.

AUDIENCE: There are two items that concerned me in the landfills, the industrial chemicals and the paint waste. Along about the late seventies, they started putting limits on lead in paint. Before that, and you indicated in the fifties and sixties (inaudible), so I would guess there's a lot of lead in that landfill. I'm just wondering, have you got any idea what's in the landfill or (inaudible) just an ostrich in the sand here?

MR. NIESLANIK: No. We did estimate what we thought was there based upon things like that. And some of the lead -- some of the paint that was used at NRF, we know what was used because it was built -- it was brought to military specs. We can go back and look at the military specs in the fifties and it will tell you what that paint was. So we do know with quite a bit of certainty the types of paints that could have been in there.

We then estimated how much could have been dumped in a particular spot, and we came up with

an estimate of the lead concentrations, and we did a risk assessment based on that. We are not, however, saying that we're hanging our hat on that risk assessment because it's all based on this series of record searches, assumptions, and calculations rather than, in the case of the ditch, where we had actually sampling data to base the risk assessment on.

AUDIENCE: How about doing some analysis underneath this landfill to see just how much has seeped down through some of this other project you're talking about?

MR. NIESLANIK: We have long-term groundwater monitoring data from all around the site, and we are not seeing any, and we have not seen in the past, any contaminants in the groundwater that are above drinking water standards.

We also did the same calculation, the computer model, based upon what we think is there and calculated what could get to the aquifer in the future. Again, those do not come up to the --

AUDIENCE: So you feel like all you have to worry about is the dust that comes off the top or something?

MR. NIESLANIK: No. No.

MR. NEWBRY: Part of the Proposed Plan

or the preferred alternative, number two, will include continuing groundwater monitoring and gas monitoring.

MR. NIESLANIK: Right. So historical data indicates there isn't any, but we're not going to rely on that only.

AUDIENCE: What would a single barrier cover be?

MR. NIESLANIK: A single barrier cover is a -- oh, it's an engineered clay cover. The basic design of that is you come and you put in a layer of native soil and you compact that with heavy equipment. Then you come in and you put in a designed engineered clay liner, clay cover, which has certain permeability of the clay, and you put that in. Then you come in and put another layer of native soil over so you can plant vegetation on it. So it's a three-layered cover, and that clay layer is -- is significantly less permeable to the water, so it would -- it would run the water off a little more rapidly.

One of the things that I mentioned was the use of site-specific data to help pick that preferred alternative. The site data is it rains very little in Idaho.

AUDIENCE: A lot of wind there, though.

MR. NIESLANIK: But there's a lot of wind, and that's the vegetation. It will be planted, and we've had a lot of discussions about how to get that plant life growing rapidly to help hold that soil down and to prevent the erosion of the cap. So those will be taken into account again during the design phase.

Any other questions?

Now I'm going to turn it over to Nolan for the comment portion.

MR. JENSEN: Okay. Again, as we go into the comment period, if you would please stand up, please come forward if you'd like. We won't be responding to your comments again, but please be sure you state your name and take up the five minutes if you would like that.

Okay. We'll open it for comments.

Yes, sir.

MR. FRITZ BJORNSEN: Fritz Bjornsen, Boise, Idaho. I'd like to thank the presenters for bringing this to us tonight. I'm glad that they were kind of lumped together in that I would have hated to have blown a perfectly good evening on a landfill and a ditch.

And with that in mind, I think that the landfills and ditches certainly are a very minor part of the problems that we have at INEL. I would hope, however, that the DOE and others do continue to monitor these sites for future problems and that they continue to bring these sites, as insignificant as they may seem, forward to the public and let the public make their decisions based on the information that is available rather than assuming that these are too small for our concern. Thank you.

MR. JENSEN: Anyone else? Just raise your hand. Don't be shy. Going once.

Okay. Just one more time on those proposed plans, please remember, I believe the comment period goes to May 12th. So any time between now and May 12th, you can submit a written comment on this Proposed Plan. And again, it's postage paid, preaddressed, if you get it off the back of the Proposed Plan.

Any other comments?

Yes, ma'am.

AUDIENCE: Now, is that an extension of the April 30th I see on the copy?

MR. JENSEN: No. Two separate projects. One goes to April 30th. This one goes to

May 12th.

MS. MEYER: They started at different times.

MR. JENSEN: Okay. Thank you very much. It was nice to have you come. Good night.

(The proceedings concluded at 8:35 p.m.)

REPORTER'S CERTIFICATE

STATE OF IDAHO)
) ss.
County of Canyon)

I, CAROLE A. WALDEN, a Notary Public in and for the State of Idaho, do hereby certify:

That said proceedings were taken down by me in shorthand at the time and place therein named and thereafter transcribed by means of computer-aided transcription, and that the foregoing transcript contains a full, true and verbatim record of said proceedings;

I further certify that I have no interest in the event of the action.

WITNESS my hand and seal this 29th day of april, 1994.

Carole A. Walden

CAROLE A. WALDEN, CSR
Notary Public in and for the
State of Idaho, residing in
Caldwell, Idaho.
My commission expires 10-29-99.

ORIGINAL

PUBLIC MEETING

Palouse Empire Mall
1850 W. Pullman Road
Moscow, Idaho

April 21, 1994
6:30 p.m.

MODERATOR

Nolan Jensen, Department of Energy

ORGANIC CONTAMINATION IN THE VADOSE ZONE

Presenters:

Patti Kroupa, Department of Energy

Amy Lientz, EG&G Idaho

NAVAL REACTORS FACILITY

INDUSTRIAL WASTE DITCH AND LANDFILL AREAS

Presenters:

Richard Nieslanik, Westinghouse

Dary Newbry, Department of Energy,
Naval Reactors Facility Project Manager

Reported by:
Darcie L. Olson

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I N D E X

MOSCOW, IDAHO; THURSDAY, APRIL 21, 1994, 6:30 P.M.

* * * * * * * *

NOLAN JENSEN: I'd like to welcome you to our meeting tonight. Nice to see some people show up right at the last minute. We were afraid no one was going to show. My name is Nolan Jensen and I work for the Department of Energy in Idaho Falls at the INEL, which is the Idaho National Engineering Laboratory. And we're going to be talking about two projects tonight in our environmental restoration or our cleanup program. And I'm glad it's kind of a small group because it looks like we are going to have some background noise.

I'd like to also mention we do have a court reporter here to keep a record of the proceedings and whatnot. So as we get into question and answer, if you have any questions or whatnot, please speak up.

Couple of people I would like to recognize here, and that's -- we have just recently established a Citizens' Advisory Board. We have Mr. Joel Hamilton and Mr. Chuck Broscious who are here who are both members of that Board, and they're both from the area here. And how many are on that Board, do you

remember, Chuck?

CHUCK BROSCIOUS: Fifteen.

NOLAN JENSEN: Fifteen people. So two out of fifteen from this part of the state. Anyway, again, we'll be talking --

CHUCK BROSCIOUS: Actually three. There's a lady from Wallace that's coming.

NOLAN JENSEN: I won't try to find her. Let's see, I can't see her name. But anyway.

We'll be talking about two projects tonight. The first one is titled Organic Contamination in the Vadose Zone. That's that facility called the Radioactive Waste Management Complex. It's a large waste management complex at INEL. The second project will be the cleanup that's going on at the Naval Reactors Facility.

And we'll kind of do the meeting in two parts. With a small group like this, we'll try to keep it very informal. However, just to make sure we keep going, as the presenters give their talks, if you want to ask a clarification question, please do so, you can interrupt them. But if you have a longer more in-depth question, we found that it's better to wait until the end to ask those.

So we will have a question and answer period

at the end of each presentation. And then also, after the question and answer period, we will stop for a few minutes and have a formal comment period where you can, if you have a comment that you would like to give for the court reporter, you can do that as well.

Also, just as an aside, I don't know if you have been about the Mall at all today, but we've had posters out. Another thing we're doing in conjunction with these meetings is our semiannual briefings. And that's where we come out every six months or so and just give an update on all the projects that are going on in our program. And so if you want any information about that, here's a guide that's at the back. This is more of a general discussion about the program. And I don't have them with me, but there are documents called Proposed Plans. They're in kind of a light yellow print. You got one, Dave? Are you digging for one? There we go. Those give more information about each project, and there are copies at the back.

Also, the Naval Reactors Facility has -- they're in a comment period for two small scaled cleanups called Removal Actions. And those won't be discussed as part of our presentations, but again, we

have information at the back on those. And the presenters are here from the Naval Reactors Facility and you can ask them questions about that during the break or whatever.

One last thing. Mr. Reuel Smith standing at the back, if you have questions -- I noticed about an hour ago, I was watching the news and there was a press release today on some releases from Hanford. So if you have questions about anything like that, unfortunately, those of us who are here tonight, don't have that information or don't know about that. But Reuel's the man that can get you information or in contact with people if you have questions on subjects other than what we'll talk about tonight. Tonight --

MARGIE ENGLISH: It was historical, the release.

NOLAN JENSEN: Oh, right. Very good. It was a study of past releases from like probably during the'50s and'60s.

MARGIE ENGLISH: 1940 to '48, I think. '45 to '48.

NOLAN JENSEN: All right. See if I've covered everything. I think so, just about. By the way, this is Margie English. Tonight, we -- in our

Environmental Restoration Program, it is managed under an agreement with the Environmental Protection Agency and with the state of Idaho. Those two agencies signed an agreement with the Department of Energy on how we would go about implementing the cleanup and investigation program. And they are here tonight, at least the State is. EPA wasn't able to make it. But Margie English, were you going to introduce your folks tonight?

MARGIE ENGLISH: Thanks, Nolan. I'd just like to introduce a couple of other people who are here from our State team tonight. Daryl Koch. Daryl Koch is the Waste Area Group Manager for the State working with the RWMC project. I'm the Waste Area Group Manager for the State and for the Naval Reactors Project. Dave Hovland who's in the back, many of you have seen before. He is the Remedial Technical Supervisor for our staff and he has helped coordinate the evaluation of the project that you'll hear about tonight. Jeff Fromm is a toxicologist, and he's helped evaluate the sites from a risk point of view. Gary Winter is a hydrogeologist, and he's helped us evaluate groundwater issues related to those sites.

On behalf of myself and my colleagues, I

would like to welcome you all here. We're really glad that you came out tonight. The State and the other agencies really encourage the public's participation process. Over the past year or so, we've all worked really hard to evaluate these sites. And the alternatives for remediation that you'll hear about tonight are the ones that are currently preferred but are favored by our agencies.

However, I do want to emphasize that the actual decision for remediation has not been made yet and will not be made until at some point after when the comment period closes. And at that point, the decision will be formalized in a Record of Decision. So your comments are very important to us. And I want to encourage you to ask any questions that you may have and feel free to make any comments because we really want them in the process. Thank you.

NOLAN JENSEN: Thanks, Margie. She reminded me of something else I forgot to mention, and that is that we are in the middle of a 30-day public comment on both of these projects. Tonight we're going to give you an opportunity to give oral comments with the court reporter here, but the 30-day comment period is a time where you can submit written comments anytime during that period. And on those

Proposed Plan documents, there is a pre-addressed, postage paid comment sheet. You can tear that off and submit that anytime during the comment period.

Okay. One last thing before I turn the time over to our presenters. And that is, just want to introduce the concept to you, and that is the concept of risk. If you've ever had any exposure to our cleanup programs or the Superfund program in general, you know that there's a lot of discussion about risk. And it's kind of a difficult topic to communicate, so we're always trying to come up with better ways to communicate the decisions that we're making in terms of risk.

We're going to be using this chart tonight to help do that. I'll just introduce that very briefly. When we talk about risk, there are two types of risks. Generally what we're doing is going out and investigating sites that have had potential release of hazardous chemicals. And those types of chemicals usually have two types of toxicity. One, they are carcinogenic or potentially cancer causing; and the other, noncarcinogenic refers to other types of health effects like could be liver or kidney damage, those kinds of things; nerve system damage, those kinds of effects. So those are the two types

of risks that we'll talk about.

And they're expressed in different ways. For carcinogenic risks, the Environmental Protection Agency has established a risk range. And that is between 1 in 10 thousand and 1 in 1 million. Anything within or below that risk range is considered acceptable. And basically what that means is, is that as you go through the risk assessment and the calculations, it is deemed acceptable that as long as you let -- what the 1 in 10 thousand means is that if 10 thousand people were exposed to those conditions, you would expect that at least 1 person above the national average would contract cancer. I hope that means something to you and will get clearer as we go through the night.

The noncarcinogenic risk is expressed in terms of a hazard index. And that's a little bit different. What that suggests is as long as you're below 1, then based on the information that has been gathered by the Environmental Protection Agency and others, is that as long as you're below that number, there's a high degree of certainty that even sensitive populations like young children would not have that health effect occur. As you get above 1, then the certainty decreases, and you don't -- and

you have to do more careful analysis.

So, tonight as we talk about risk, the presenters will come back and refer to this chart. And hopefully that will give you a little heads up on what they'll be talking about.

So, I'll go ahead and turn over the time to the presenters now. Our first project, again, is Organic Contamination in the Vadose Zone. And Patti Kroupa -- or Kroupa, excuse me, from DOE, one of my colleagues is here and she will present part of that discussion. And Amy Lientz from EG&G will present part of it as well. So I'll turn the time over to Patti now.

PATTI KROUPA: Thank you, Nolan. For our talks tonight, I'm going to go over some background on the Organic Contamination in the Vadose Zone, give you a little bit of information on the subsurface, geology. And then Amy will talk about the risk assessment results and the remedial investigation results, and then I'll talk about the alternatives that we went through in developing the feasibility study and our recommended proposal that we're looking for your comments on.

As Nolan mentioned to you, the area that we're talking about tonight is the Radioactive Waste

Management Complex. It's located in the southwestern portion of the Idaho National Engineering Lab which is about 50 miles west of Idaho Falls. We started a remedial investigation/feasibility study about two years ago. The area that we're looking at, this is the 88 acre disposal area. And the area that we're actually interested in cleaning up is the subsurface area. It extends -- the Vadose Zone extends from the soil cover all the way down to the top of the Snake River Plain Aquifer which is at about 585 feet. I brought a sample of -- we did a lot of drilling out there last summer and I brought a sample of some of the material. This is a very porous-type material. The organics are, you might say, trapped in these pores. And I thought it would be interesting for you to see what the actual subsurface looks like.

There's also two interbeds, one at the 110 foot level and one at the 240. And this is a sample of the 110 foot interbed. It's sandy, silts and clay.

From about 1966 to 1970, there were -- well, quite a bit of disposal of solvents. Primarily carbon tetrachloride, solvents that were used as degreasers. And they went into all of these pits. This is the oldest pit, it operated from 1954. Since

1970, there hasn't been any disposal, but these drums over time have leaked.

And so with that, I'll turn it over to Amy and she'll talk about the extent.

AMY LIENTZ: In August of 1991, we initiated the remedial investigation. And the purpose of that was to determine the nature and the extent of the contamination in the Vadose Zone. And through extensive sampling which included sampling of groundwater, perched water, soils, vapor, air; we determined that the contaminants were primarily concentrated in this area right here, right above the 110 foot interbed. The results also indicated that the contamination is moving both laterally and vertically. Vertically meaning to the atmosphere and primarily downward towards the aquifer.

As Patti explained, the interbed is acting to slow the contaminants from migrating towards the aquifer. So currently, right now in the aquifer, we are showing concentrations that are below the state and federal drinking water standards.

We have four contaminants of concern. We call those organics. We've referred to those as our organics, and they include primarily carbon tetrachloride which is a contaminant typically found

in solvents and paint thinners. And in addition, we have contaminants that are typically found in used oils and degreasing agents, and that includes 1,1,1-trichloroethane, tetrachloroethylene, and trichloroethylene.

In addition to the sampling that we conducted during the remedial investigation, we also conducted a treatability study on vapor extraction technology. A large part of that study was conducted last year from March until September. We had an extraction well through the heart of the contamination right here. And the results of that were very successful. We showed that vapor extraction is a technology that's very viable and we needed to consider that in our feasibility study.

In addition to knowing that it worked very well, we were also able to tell more about the nature and characteristics of our vapor plume. So from that and with the information we gathered in the sampling, we went on and did our fate and transport modeling.

And fate and transport modeling is a computer simulated program which helps us in our risk assessment and helps us evaluate the peaks to the atmosphere and the peaks to the groundwater. So the modeling results indicated that -- it predicted that

the concentrations to the atmosphere have already peaked and have since decreased with time. And the concentrations to the aquifer, it predicted that it will peak in approximately 77 years. And the contaminant that will peak in the highest concentration is carbon tetrachloride. And the prediction is that it will peak at about 125 parts per billion. And now the maximum concentration level or the federal and state drinking standard for carbon tetrachloride is 5 parts per billion.

So after we did our modeling, we moved on to the risk assessment phase. And a risk assessment helps us determine what the current and the future potential risks are to human health. And we evaluated several time frames, from 1992 to the year 2121, and we looked at three different locations.

We looked at the 200 meter location which is the boundary of the Subsurface Disposal Area; 500 meter location just off the side of the boundary; and 5200 meters which is considered the southern INEL boundary.

And we looked at two individuals engaged in two types of activities. We looked at a worker and we looked at a resident. For a worker, we assumed that a worker would be working within the Subsurface

Disposal Area within the next hundred years. And while that worker is employed there, the Department of Energy would be operating and maintaining that site. So there would be several controls and restrictions in place that would prevent or inhibit the use of contaminated groundwater. Therefore, you see fewer pathways associated with the worker. The pathway being inhalation of vapors while the individual's both indoors and outdoors.

Now with the resident, we assumed that they could be living at the 5200 meter location. Although there are no individuals living there right now, we assume there could potentially be individuals living there from now until the next hundred years. After a hundred years, they could live anywhere within this area. But during that time, there would be those controls and restrictions in place that would prevent or inhibit use of contaminated groundwater. So we see more pathways associated with the resident. And those pathways being the inhalation of vapors, thermal contact associated with those vapors, and ingestion, direct ingestion of contaminated groundwater while the individual's outdoors and indoors.

So with that, what are our risks to the

worker and the resident? Well, for a worker, assuming that the pathway is inhalation of contaminated vapors, we found that there is an acceptable carcinogenic risk associated with that worker at the 200 meter location that fell in 6 in 100,000, right in this risk -- right in this range here which Nolan explained was the acceptable risk range. There was a hazard index associated with that worker that fell at 2. So as you can see, it fell above what EPA considers acceptable.

Now for a resident at the 200 and the 500 meter location, there was a carcinogenic risk associated with that resident from the use of contaminated groundwater at 2 in 10,000. And there was a hazard index that fell higher, depending on the location and the time frame for that resident, that ranged from 3 to 7 with the maximum being 7.

Now for a resident at the 5200 meter location, assuming they could be there during the control period when DOE's operating, maintaining the site, and after that time frame, there was a carcinogenic risk associated with the use of contaminated groundwater that fell at the same range, at 2 in 10,000. So there was a risk above the acceptable risk range. And there was a hazard index

slightly lower with that resident at 5.

So in summary of the risks, if no action is taken, we do see a risk posed to a worker -- potential risk to a worker and to a resident. So we had to evaluate alternatives that would minimize that risk to a worker and to a resident. And part of those alternatives included extracting and treating those contaminants, or destroying those contaminants in place, or containing those contaminants in place.

So with that, I'm going to turn it back to Patti Kroupa to explain to you what our alternatives are that we evaluated against that criteria.

UNIDENTIFIED SPEAKER: Can I ask a question, please.

AMY LIENTZ: Sure.

UNIDENTIFIED SPEAKER: In developing your fate and transport models, which are primary ingredients in coming up with the other risk ranges and whatnot, how much importance is the initial volume that was dumped there in developing that fate and transport?

AMY LIENTZ: It is important, but -- Jeff, do you want to address that -- Jeff Sondrup is from the EG&G who's our modeler. And he can best describe that inventory.

JEFF SONDRUP: That's a good question, and the answer is it is important.

UNIDENTIFIED SPEAKER: Crucially important? Okay. Let me tell you where I'm coming from. You missed this during the briefing a couple of weeks ago. In your handout, you acknowledge that you're working with 88,400 gallons. That's the number you're assuming. In the 1977 Environmental Impact Statement, they cite as these chemicals dumped and at the burial ground, 1975, surface chemicals dumped, 3 million 53 thousand. Same year, subsurface chemicals dumped, a million 550 thousand. For 1976, next year, surface chemicals dumped, 2 million 989 thousand; subsurface, same year, a million 508 thousand gallons.

AMY LIENTZ: Right. We have a copy of probably the same table that you're looking at. And can I suggest that we hold that, because I can explain that quite readily to you after. Can we wait until after we're done with the presentation?

UNIDENTIFIED SPEAKER: It sounds like a fatal flaw to the whole fate and transport.

AMY LIENTZ: It's not a fatal flaw. It's not chemicals that are disposed at the Subsurface Disposal Area. It's a summary of the nonradioactive

waste disposal and releases at the INEL and it is -- what you're reading is surface and subsurface here from this chart, and it includes the oils and solvents that are used by TAN as fuel oils. So it has nothing to do with the Subsurface Disposal Area. And I can -- I'd be happy to explain that chart to you based on your comment that you made previously to.

UNIDENTIFIED SPEAKER: Okay.

JEFF SONDRUP: Just to answer your question. It is important, and we can argue about what's critical and crucially important. But I'd just say it's very important. But we do feel fairly comfortable with the number that we used for the inventory for the organic chemicals.

PATTI KROUPA: We looked at several alternatives and we went through a screening process and we carried these four alternatives through a detailed analysis. The first alternative would be where you would simply not take any action at all. You would just monitor the soil and the groundwater in time and -- well, the timing was for 30 years in the future at a cost of about 4 million dollars. We are not recommending that alternative because we don't feel it's proactive enough and we're looking at

the Snake River Plain Aquifer as a resource. And we don't want to see that migration occur.

The second alternative is where you would contain the material. And by doing that, it would be a cap over 88 acres. You would stop the infiltration of surface water; however, the volatiles that are already in the subsurface would continue to migrate over time. And that is a cost of 43.3 million dollars.

The next alternative which is our recommended alternative is that you go ahead and physically remove and treat the vapors. We've had a very good success with our treatability study. Vapor vacuum extraction has been shown to be effective in that subsurface material. And that is a cost ranging from 12 to 32 million. I'll explain a little bit more about that in a minute about why those costs range that way.

The next alternative is an enhancement alternative of alternative 2 where the vapors would be removed and treated through enhancing by radio frequency heating, enhancing the volatilization at a cost of 60 million dollars, approximately 60 million.

Now as I said, alternative 2 is our Preferred

Alternative. We feel that we want to maintain flexibility because of the difficulties in the subsurface and the rates of removal. So we're proposing a three-phase process. Each phase would run for two years. So you'd have a total six years.

The first phase would be five new extraction wells and ten new monitoring wells. And then we would go ahead and extract the materials through the extraction wells in the sources that we now know pits 4, 6, 10 and 2. And it would be treated through catalytic oxidation treatment. We think that this is going to provide us a lot of flexibility and we're pretty excited about it as far as the results that we received. And then you would continue with your monitoring as well.

So as Nolan mentioned, we have a comment period. We've received very positive comments. This is our last meeting. We were in Twin Falls and Pocatello and Boise and Idaho Falls. And we've received, oh, I'd say how many comments, 20 maybe or -- anyway, everybody's pretty supportive of the project, and we're quite pleased with that. And we're hoping to have a Record of Decision by November of '94 where all the agencies would get together and decide on the remedy. Thank you.

NOLAN JENSEN: We'll go ahead and open it up for question and answer. And we'll get Amy and Patti and a couple of the other project people. Please, if you ask a question, speak right up so the court reporter can hear you.

Just something I forgot to mention earlier too. And that is when this Record of Decision is issued in about November, any comments that you give during our comment period will be responded to in a responsiveness summary that will be included in that so you can see how your comments have been addressed. Any questions?

UNIDENTIFIED SPEAKER: There was a -- let's see, you made a comment about the volume of contaminants believe to be disposed, what was that volume?

AMY LIENTZ: Eighty-eight thousand 400 gallons.

UNIDENTIFIED SPEAKER: Is that calcined?

PATTI KROUPA: No.

UNIDENTIFIED SPEAKER: That's the process, it was calcined and turned into some sort of sludge?

PATTI KROUPA: No. This was inventory that came from Rocky Flats, primarily solvents and degreasers and -- it's in the Proposed Plan, where it

came from and some of the background.

UNIDENTIFIED SPEAKER: No. I thought it was -- I thought I had read in here that it was more or less solidified.

PATTI KROUPA: It was solidified with calcium silicate.

UNIDENTIFIED SPEAKER: Okay. That's what I was talking about. So 88 thousand gallons solidified.

PATTI KROUPA: Yes.

UNIDENTIFIED SPEAKER: What didn't migrate out, has that been removed? The rusted out barrels and the remaining calcined product, has that been removed?

PATTI KROUPA: The actual drums?

UNIDENTIFIED SPEAKER: Yes.

PATTI KROUPA: No, they have not been.

UNIDENTIFIED SPEAKER: Has that been proposed?

AMY LIENTZ: That will be investigated in the Comprehensive WAG 7 through remedial investigation which is scheduled to begin shortly.

DAVE HOVLAND: I might add something else. I'm Dave Hovland with the State. I'm the Pit 9 Project Manager for WAG 7. And if you get an

opportunity to take a look at the Federal Facility Agreement, in here you can see that the RWMC is broken into several operable units. Pit 9 is a multi-year Interim Action designed to see if the actual -- maybe we can show what Pit 9 is -- if the actual contents of Pit 9 can actually be mined in a double contained building where you can actually take out the plutonium and also destroy the organics that are still remaining in the Pit.

So that's something that's going on along with the OCVZ here which eventually, in a couple of years, feeds into the pits and trenches, remedial investigation.

So there's several things going on right now which will look at the contents of the pit like Pit 9. And the secondary source which Patti alluded to, what we're doing now is they've identified through the remedial investigation just where the highest concentrations are, and the vapor vacuum extraction is a good way to remove that. So this is a secondary source. And the primary source will be eventually dealt with in the pits and trenches. So there's several things going on.

PATTI KROUPA: So we have a source -- we have a source investigation that's going to start in 1995

and that will cover -- that's the drums that you're talking about. What we're covering is what's already been released and gone.*

UNIDENTIFIED SPEAKER: Well, the release is still ongoing; isn't that correct?

PATTI KROUPA: You could --

UNIDENTIFIED SPEAKER: I mean it didn't start in 19 -- I mean it started as soon as the drums were put in the ground and lasts as long as they're sitting there.

PATTI KROUPA: That's why we did modeling to try to predict when it would peak in the groundwater.

UNIDENTIFIED SPEAKER: How much is the model, say, is migrated out so far.

JEFF SONDRUP: Let me talk about this. I think I know what we're getting at here. There is still organics in the pits. But we believe the majority, as high as 80 to 90 percent have probably escaped the pits. These are highly volatile contaminants even in adsorbed form. And we have done several drum retrieval studies where we've actually gone back into some of these pits where drums have been buried for six, ten, twenty years and examined

* see correction page 109

the condition of the drums after these periods of time. And using that information, we've been able to predict how many drums have failed and how many will fail or how many are still -- have their integrity has been maintained. And after about 20 years, it appears that almost 80 percent of the drums have failed in some sort of manner either completely deteriorated or have some sort of hole in them that would allow these chemicals to escape through a number of different processes.

So, if you'll recall, it's been since 1966 which is almost 30 years. So we believe that a large majority of the drums have failed and most of the contaminants have escaped the drums. Therefore, what we're proposing to do is attack the contaminants in the Vadose Zone and clean those up. Because the threat to the aquifer is posed mainly by the contaminants that are in the Vadose Zone right now and not in the drums.

UNIDENTIFIED SPEAKER: Did a significant portion volatilize to the atmosphere?

JEFF SONDRUP: Yeah. In fact, the contaminants in the Vadose Zone right now are a small percentage of the original inventory. We predict -- or have predicted or believe that most of the

contaminants -- can't remember the actual percentage, almost 80 percent have been released to the atmosphere. And that's due to the close proximity of the pits to the surface.

UNIDENTIFIED SPEAKER: I guess, these are not solvents. And I guess I'm not sure how they were released, but I'd (inaudible.)

(Whereupon the court reporter asks the speaker to speak up.)

UNIDENTIFIED SPEAKER: I'd like to know if you've lost this liquid, these solvents behave with DNAPL and groundwater systems. Have you found evidence of -- DNAPL, it's spelled D-N-A-P-L. (inaudible) liquids on some of these layers or (inaudible.)

JEFF SONDRUP: No, we haven't. Which doesn't mean it's not there. We feel by the process that they went through during treatment by taking the free liquid organic, the DNAPL, mixing them with the calcium silicate; and in addition, if there was any remaining free liquid after that, they added oil dry, which is another commercial absorbent, to the drums to bind up any remaining free liquids. What it formed was a very bisques paste, almost like a real thick peanut butter. And we believe that because of

that process, we don't have DNAPL contamination. Or if we do, it's very small and probably contained or remains in the vicinity of the pits.

UNIDENTIFIED SPEAKER: I believe we are characterizing this as -- of all those organics that were dumped were in some sort of an adsorbic meeting, you know. And that simply isn't the case. You know, there was an acid pit out there that was called the acid pit where you got tanker trucks would drive up to the thing and just dump into it, you know, solvents, you name it, every kind of imaginable chemical that was ever used on the site. You know, to characterize that that was the only way that materials -- organics came to the site and were disposed of is absolutely incorrect.

JEFF SONDRUP: It's true --

UNIDENTIFIED SPEAKER: It may be true it's stuff from Rocky Flats but not from (inaudible) --

JEFF SONDRUP: It's true that there was some -- and that's a good point, I'm glad you brought that up. It's true that there was some -- that we have evidence of dumping of free liquid and which did contain some on-site generated solvents in the acid pit which is just below Pit 6. But it's also true that we believe -- it's also true that the amount of

those chemicals is believed to be much, much smaller than the amount received in the years between 1966 and 1970. A few thousand gallons as compared to the 88 thousand gallons.

DAVE HOVLAND: And by the way, the acid pit is identified as a Track 2, that's a limited field investigation where the summer report is just about being completed right now. What we're finding is that Track 2 is going to be rolled into the pits and trenches again as part of the long-term strategy for the SDA. So that summer report should be completed (inaudible.)

UNIDENTIFIED SPEAKER: And the concern in the acid pit was not totally organic it's mercury. That's (inaudible) separate investigation.

JEFF SONDRUP: I should also add though that any organics that were dumped into the acid pit and are volatilized that are in the Vadose Zone would be addressed by our vapor vacuum extraction system.

UNIDENTIFIED SPEAKER: With your remedial action, what is your predicted parts per billion in your aquifer for the future? Have you done any modeling for that?

JEFF SONDRUP: What we've done is we've done modeling to predict at what level we would need to

reduce the concentrations to so we -- in the Vadose Zone so we wouldn't exceed those drinking water standards in the future. And those numbers are --

AMY LIENTZ: 30 to 60 parts per billion.

JEFF SONDRUP: 30 to 60 parts per billion. Currently we have, in the most highly contaminated areas, about 2 to 3000 parts per billion.

UNIDENTIFIED SPEAKER: Can you compare the Alternative 2 and 3 with respect to meeting these standards?

AMY LIENTZ: Chris might be able to help. Chris Hamel is the individual from Dames & Moore that did the feasibility study and evaluated the alternatives.

CHRIS HAMEL: We primarily wanted to look at radio frequency heating as an enhancement technology to conventional vapor extraction, mainly because it's being used at several other sites including Savanna River. And it has some promising facets of it. But at the OCVZ, we felt that the benefit that would be received by implementing an innovative technology just would be insignificant relative to the benefit that we would receive just with the conventional system. But basically it would be operated in a manner that we would target areas that we show that

we have partitioning of the vapor contaminants to soils, perhaps perched water, and drive those to a vapor state to enhance their recovery by the vapor extraction system. But really, we felt that it's too uncertain, would require extensive treatability studies out there on the site and didn't warrant further consideration.

UNIDENTIFIED SPEAKER: What is the groundwater recharges to say?

NOLAN JENSEN: Like where is it from?

UNIDENTIFIED SPEAKER: No. How much.

NOLAN JENSEN: A lot.

JEFF SONDRUP: We estimate in undisturbed areas that the -- I'm going to give between infiltration rate -- in undisturbed areas, it's about 1 centimeter per year. And then the disturbed areas such as like SDA, we have estimates depending on where you're at that range anywhere from 2 to 10 centimeters a year.

NOLAN JENSEN: I misunderstood your question. I thought he was talking about the total aquifer recharge. He's talking about from rain.

UNIDENTIFIED SPEAKER: And any estimates on travel time from surface to the aquifer?

JEFF SONDRUP: Yeah, that's a --

PATTI KROUPA: Gary, can you help us out on that? Gary is a hydrogeologist.

GARY WINTER: Not really.

JEFF SONDRUP: That's one that gets bantered back and forth. The most current estimates are, I think, could be on the order of 40 to 50 years.

UNIDENTIFIED SPEAKER: So there's no saturated interval. We're looking at unsaturated flow all the way down to the water table; is that correct?

JEFF SONDRUP: We have areas of perched water but they're very small. I don't want to say there's not -- it's completely unsaturated. But for the most part, yes, it is.

UNIDENTIFIED SPEAKER: Did you look at putting a cap over the site in addition to the soil vapor extraction?

DAVE HOVLAND: When you say cap, do you mean something that's very, very impermeable?

UNIDENTIFIED SPEAKER: More or less impermeable.

CHRIS HAMEL: We did evaluate the capping alternative, and we considered VVE in addition to -- or as a supplement to a capping alternative. But, we had several reasons to feel the containment would be

more difficult to implement. Mainly a cap that size has significant short-term impacts because we'd have to transport an extensive amount of materials to the site. It would involve a lot of potential transportation casualties, so to speak, just from statistics that we got from the Department of Transportation. It would also complicate future activities out at the site in terms of cleanup of the pits and so on of the activities going on at Pit 9. And I guess some of the fate and transport modeling that we've done since that time indicated that a cap may actually increase the amount of contaminants that would eventually make it to the groundwater. We haven't confirmed any type of those types of calculations, but that's a suspicion.

UNIDENTIFIED SPEAKER: By preventing volatilization from the surface?

CHRIS HAMEL: Right, by preventing their escape to the surface. So it may complicate the vapor extraction scenario. And at a cost, that would just not warrant justification in achieving our remediation goals to prevent MCL's from getting through.

JEFF SONDRUP: One other thing I just want to add to that, and you bring up an important point.

You can increase the efficiency of a vapor extraction system by placing the cap. Because rather than extracting contaminated air from this area and being replaced with clean air here, you can create flow in a horizontal direction to the well, and that's impact a larger area and clean it up. The basalts, a lot of the basalts are very permeable. And as Amy mentioned, these interbeds, because of their increased saturation, tend to act as barriers to gas migration. And even the surficial sediments do as well.

UNIDENTIFIED SPEAKER: Say that again. The interbeds have increased saturation?

JEFF SONDRUP: Right. They're more saturated than the surrounding basalts.

UNIDENTIFIED SPEAKER: Why is that? Aren't they sand?

JEFF SONDRUP: Well, they're sands, silty sands, clays.

UNIDENTIFIED SPEAKER: They have a much higher surface areas and truck much more space in between the --

JEFF SONDRUP: Smaller pores.

UNIDENTIFIED SPEAKER: Smaller pores, but total area is much bigger.

JEFF SONDRUP: Right. And even the surficial sediments behave the same way, and therefore, even with these natural features, we get, in essence, a kind of cap or the same effect that a cap might produce.

DAVE HOVLAND: Plus, isn't there already several feet of soil on the SDA anyway due to their cover material?

JEFF SONDRUP: Several feet of surficial soil?

DAVE HOVLAND: No. Don't they have like a surficial layer anyway, above the pits and trenches?

JEFF SONDRUP: Yeah. Above the pits, there's about two feet -- I'm sorry, two meters.

UNIDENTIFIED SPEAKER: You've just said a few minutes ago that it takes 50 years for something to get from the surface to the aquifer; is that correct.

JEFF SONDRUP: That's what the water travel time is predicted to be.

UNIDENTIFIED SPEAKER: Again, the '77 EIS said it was four to six weeks.

NOLAN JENSEN: That's probably talking about like our disposal ponds. That's not to the aquifer.

UNIDENTIFIED SPEAKER: It says to the aquifer.

NOLAN JENSEN: That may be talking about some of the disposal ponds.

JEFF SONDRUP: I'd have to look at that to see what that, if --

UNIDENTIFIED SPEAKER: That's not the only place that shows up. You read back on these, you know, states of the same thing.

JEFF SONDRUP: Well generally, the further back in time you go in the '70s, the estimate of travel time to the aquifer for recharge was thousands of years. And the more we know about our system and the more we study it, the shorter that time interval becomes or what we estimate that it is. So --

UNIDENTIFIED SPEAKER: It sounds like you're going in the opposite direction --

JEFF SONDRUP: That kind of surprises me --

UNIDENTIFIED SPEAKER: Four to six weeks as opposed to 50 years.

JEFF SONDRUP: That number, I'd have to read it, but I'm guessing it's probably enhanced because of an increased grading because of disposal pond or --

DAVE HOVLAND: The spreading centers.

JEFF SONDRUP: An increased head at the surface.

DAVE HOVLAND: Does it say, Chuck, in there what it's referring to?

UNIDENTIFIED SPEAKER: (inaudible.)

JEFF SONDRUP: If you have saturated flow, the water's going to move a lot faster.

WALTER BETWAY: (spelled phonetically) I have a comment actually. Carbon tetrachloride was used for years as dry cleaning solvent and probably dumped in the Spokane garbage dump up there, 80 thousand gallons a year. What my biggest concern and has been and it's a repeat, I think I did write a letter on this subject, which I hope you did get it sometime or will get, is the technology transfer. This isn't the only problem, and it's actually probably a small one compared to the rest of the world. There's 8000 more garbage dumps out there of which a good percentage probably have more than what's here. And what I'm very much concerned is the technology transfer. I'm concerned about one of the objects was your software. I see some software printouts and I'm not happy with them in the INEL Repository. You people have failed to format these reports to be readable, and that's something that should be looked into very much seriously.

I also see no source listing of any code

which means you're pulling things out of a hat. In my opinion, I would like to see that source code in the INEL and see some documentation to go with it rather than -- and I would like to see source code that is readable and understandable by anybody in the business without having to play games and go through -- I don't want to spend six years trying to figure out somebody else's code.

AMY LIENTZ: What source code are you referring to?

WALTER BETWAY: What is this model written --

JEFF SONDRUP: He's talking about the computer code itself.

WALTER BETWAY: The other question I'm asking about, is this software, is it transferable to another site? Have we generalized it so we can reuse it, or are we making software that's one time only to be throwed away and we go back and reinvent the wheel and so much for the taxpayers' dollar?

JEFF SONDRUP: This is not public domain software that I use. The computer code is called Pore Flow (spelled phonetically) and it's commercially available through a company in California.

WALTER BETWAY: But I would like to see

what's available, because if we can't use it again anywhere else, is what my biggest concern is. This is not the only site in the world, and I am concerned about the transferring of technology. When you build these vapor recovery things, can we put it on a truck and transport it somewhere else? Is it going to be -- you know, can we reuse things? Are we just doing it one time and throwing it out on the ground, oh, let's reinvent the wheel again. I don't particularly approve of that. And that's why I'm looking for these reports to be readable, reusable to improve upon looking for the source code and the data files to be kept on some form so they can be looked at and reused again and not, shall we say, confidential proprietary.

In my opinion, anything produced at INEL should be in the public domain in the area of cleanup at some point. That's an opinion because tax dollars are paying for it. I would like to see and look at some of the other alternatives of forcing air or steam in some of your bore hole pits thereby. You haven't looked at bioremediation. In other words, put some bacteria down and feed them, they will eat trichlorethylene.

CHRIS HAMEL: We did consider bioremediation

--

WALTER BETWAY: These are all possible. I think maybe we are simplifying things too much and maybe it's a combination that works. We have a tendency to look for the simple answer. What kills people? Well, let's see, we'll take away the oxygen, well that killed them. Well, maybe we take away their food, well that kills them, you know, sooner or later. So maybe we'll take away their water. But maybe the idea that it takes three or more things for a person to survive, it's too complicated. So we've got to throw out the idea of what kills people. We couldn't find the simple thing -- or what makes people live, I should put it in that perspective. We are maybe simplifying this too much. And I would like to see, you know, the other ones at least mentioned or brought out.

NOLAN JENSEN: Can we -- it's just that we just switched from question and answer to comments. So, could you give me your name and we'll connect that with that.

UNIDENTIFIED SPEAKER: My name's Walter Betway (spelled phonetically.)

NOLAN JENSEN: Do we have any more questions or should we -- we are going to have a formal comment

period. Any more questions first?

UNIDENTIFIED SPEAKER: I'd like to know how much mass is in the ground, what form it's in, and how much you expect to extract. How much of the mass you expect to extract?

JEFF SONDRUP: We estimate that -- I think it's 26 percent of the original mass in the Vadose Zone. And we haven't looked at how much mass we would need to extract, we've just looked at it from a concentration level. But we could certainly do that calculation to see how much mass would need to be removed. The form that it's in, it's in a vapor phase and a dissolved aqueous phase and adsorbed phase. However, the nature of the site is primarily basalt under the sands and there's very little organic content. And absorption is generally functioning the amount of organic content in the subsurface. So we believe there's probably less in the adsorbed phase. Up near the pits though -- or in the pits, it may be in this bisque paste form or in a pre-paste, DNAPL form. That (inaudible) or something.

UNIDENTIFIED SPEAKER: Yeah. I've got some more questions, maybe I'll talk to you afterwards.

NOLAN JENSEN: These folk will be around

after, so you can talk to them one-on-one if you'd like. Any other questions?

UNIDENTIFIED SPEAKER: As a layman and a resident of Idaho, I guess my background sure doesn't bid into all this, but I have a question which would be, at the present time, if I was living in the say the Hagerman Valley down there, would my carcinogenic risk factor be higher from eating the fish or drinking the water or from the volatiles at the present time? Which is the greater risk factor for me right now?

JEFF SONDRUP: Actually, there's no -- if you were living in Hagerman right now, you wouldn't see any contamination either in the air or in the groundwater. Maybe if the wind was right, you know, you could see very little amount of it. We have detected it in groundwater around the Radioactive Waste Management Complex, but in concentrations below the federal drinking water standard. But, the Snake River Plain Aquifer, general direction of flow is this direction, and therefore what these contaminants are going to do is continue to migrate down -- out and down and up in the Vadose Zone, and those contaminants that make it in the groundwater will be carried downstream and dispersed so that if you were

living down here, the concentration is going to be lower than if you lived or had a well nearer to the source. But right now, you wouldn't see any.

NOLAN JENSEN: Any other questions before we --

UNIDENTIFIED SPEAKER: Why do you have contaminants remain in place for no action?

PATTI KROUPA: What we mean by that is there would be no attempt to extract or treat them. They would simply just be where they have been detected now.

UNIDENTIFIED SPEAKER: But they would still move --

PATTI KROUPA: They would still continue to move.

UNIDENTIFIED SPEAKER: Also I'd like to know a statement made by Patti earlier on, no disposal since 1970; is that correct.

PATTI KROUPA: Of organics.

UNIDENTIFIED SPEAKER: Has there been any storage, temporary storage of organics since that period?

PATTI KROUPA: No.

NOLAN JENSEN: Not in this area. Right here there is an active pit for solid radioactive

low-level waste. And that's active now.

UNIDENTIFIED SPEAKER: Are there any low-level radioactive nuclides in these solvents?

AMY LIENTZ: It was not detected in our treatability study at all or in our sampling of them in the Vadose Zone. Did you get that?

UNIDENTIFIED SPEAKER: I believe so.

UNIDENTIFIED SPEAKER: That was sort of my question too, how come there was no transuranic or any other items found?

AMY LIENTZ: We did not see any, no, fortunately.

UNIDENTIFIED SPEAKER: Because I was concerned about as you're pulling vapor out of the ground, are you going to be pulling transuranics with it and how you were going to deal with that problem if it would arise.

AMY LIENTZ: No. Well we had filters on our system during the treatability study, the Preferred Alternative would be -- there would be monitoring on the catalytic oxidation system, we wouldn't have extensive controls that would look at that possibility. But, the treatability study, we ran the system for 1600 hours and extracted, what, 2000 kilograms, pounds of organics and saw no

radionuclides, so.

UNIDENTIFIED SPEAKER: That's not to say that there's not radionuclides in the groundwater underneath the burial grounds including cobalt-57, cobalt-60, cesium-137, plutonium 238, plutonium 239, 240, 241 and --

AMY LIENTZ: Those things are evaluated in the groundwater --

UNIDENTIFIED SPEAKER: What may not come out in a vacuum extraction process, but unless somebody be diluted in taking your comments that there's no radionuclides in the groundwater. There is.

AMY LIENTZ: And I never said that.

UNIDENTIFIED SPEAKER: Well, certainly presume that by the way you said it.

AMY LIENTZ: And I will not say that.

NOLAN JENSEN: This is a Radioactive Waste Management Complex, that is what they use it for. So there are -- it is there.

DAVE HOVLAND: I think you just mentioned that the vapors that were extracted from the Vadose Zone contained no radionuclides. But, maybe another thing we should note is part of this multi-year long-term strategy for the RWMC are the installation of periodic (inaudible) groundwater monitoring

wells. A couple of years ago, several more groundwater wells were put into the surrounding area to kind of tighten up the monitoring methods in the Snake River Plain Aquifer, we're getting that information quarterly. And so that's part of it, plus there's vapor pores at various horizons in these wells too that were helped to define the limits of the vapors on subsurface. So, there is information, additional information being collected on the groundwater quarterly.

UNIDENTIFIED SPEAKER: Is this particular site, the Waste Management Complex, the only site on the INEL facility where the organics are in the process of migrating downward, or are there other sites --

AMY LIENTZ: Yeah. Nolan knows that well.

NOLAN JENSEN: I don't know how well. There are a number of other sites, though. In fact, one of the other investigations we have going on is up at Test Area North where there is a solvent plume in the aquifer. There is an Interim Action there where there was an injection well where solvents were put down into the aquifer. So that is a different project.

DAVE HOVLAND: We might mention, the public

meeting is coming up in June on Test Area North. And that will be for the remedial investigation/feasibility study for that plume. It's coming up fairly soon.

UNIDENTIFIED SPEAKER: Any -- I realize that at this stage it may not be possible to answer this. But is there any indication of the relative size of the organics problem on the Waste Management Complex versus some of the other sites?

JEFF SONDRUP: I think we've mentioned two big ones. And that is Test Area North and the Radioactive Waste Management Complex. I'm also working on another project which is the Central Facilities Area Landfill. And we do have some inventory information that says small amounts of organics were disposed in the landfill and that's been confirmed by samples in the soil -- surface soil gas. But those concentrations are much, much smaller and lower than those in the soil gas at the Radioactive Waste Management Complex. And so I think we've hit the big two there.

NOLAN JENSEN: We do have another project to talk about, but I don't want to hurry you. Is that enough questions? And again, these folks will be around if you want to talk to them one-on-one.

UNIDENTIFIED SPEAKER: Yeah. Did you all consider a wash and pump approach to --

AMY LIENTZ: Are you referring to soil washing?

UNIDENTIFIED SPEAKER: No. Re-inject water and them pump it back out.

CHRIS HAMEL: We really didn't consider that because it wouldn't be appropriate for recovering vapors. If it was a groundwater problem, then certainly we would consider a pump and treat system to bring the groundwater to the surface, treat it, and re-inject it back in as clean water into the aquifer. But for recovery of vapors and treatment, it's just not appropriate.

UNIDENTIFIED SPEAKER: How about pumping air?

CHRIS HAMEL: Yeah. We've look at actually several methods that would enhance the vapor extraction system and get more contaminants to migrate to an extraction well. One of those things that we've considered is using some of the monitoring wells perhaps as passive venting wells while they're not operating as a monitoring well so to speak. So it gives a pathway for clean air from the atmosphere to get back down into the ground, make its way across

the contaminated vapors and eventually be recovered at the vapor extraction. So that's something that we are considering in our design for this.

UNIDENTIFIED SPEAKER: The chemists that I've talked to just shake their heads when I tell them about this particular proposal. They also wonder why seal lights weren't considered as a filter means.

CHRIS HAMEL: For treatment of the vapors at the surface? We evaluated probably a dozen different treatment technologies including some that are more well-known like carbon adsorption. We selected catalytic oxidation mainly because it does destroy the -- the units that we can use are very mobile, very compact relative to other types of treatment systems. And we can locate them at the various extraction well locations. There are comparable technologies that I believe we're still going to consider through the design phase, but what we want to do is target at least the destruction efficiency that is essentially equivalent to what we can achieve with catalatic oxidation and have no treatment of residual at the end of the project. Something that we could perhaps sell the technology or the equipment again, as this gentleman mentioned earlier, at the end of the project.

NOLAN JENSEN: Any other questions?

UNIDENTIFIED SPEAKER: Maybe this was also mentioned and I missed it, but what is the time frame for this particular project?

AMY LIENTZ: For the Preferred Alternative, the Vapor Extraction System?

UNIDENTIFIED SPEAKER: Yes.

AMY LIENTZ: We're looking at, again, phased approach, but two years is what we feel -- we have high confidence in that we can reduce the contaminant concentrations enough so the maximum concentration levels are not exceeded. After two years if it looks like we need to continue for another two years, or with additional extraction wells, then we will do so.

UNIDENTIFIED SPEAKER: Somebody mentioned that the highest contamination that you found there was in the range of 2 to 3000 parts per billion?

JEFF SONDRUP: That's a vapor concentration. Parts per million volume. I should have clarified that, because --

UNIDENTIFIED SPEAKER: That's a vapor air volume?

JEFF SONDRUP: Uh-huh. When we talk about groundwater concentrations, tonight we've spoken in

parts per billion. And when we've talked about vapor concentrations, we've used parts per million, vapor.

UNIDENTIFIED SPEAKER: Are the -- are those figures in your handout here somewhere?

JEFF SONDRUP: I believe so. Yes.

UNIDENTIFIED SPEAKER: I did not see them. Oh, okay. Thank you.

NOLAN JENSEN: Any more comments? Please speak up, we have some background noises. We'll go ahead and open it up. I believe we'll just have you raise your hand and I'll call you to stand up and you can give a statement if anyone has one. Don't be shy.

(A comment was made by Walter Betway starting on page 38 and ending on page 41.)

KENT MARTIN: My name is Kent Martin. I'm a health physics technologist, radiation safety. And I've worked at Hanford and commercial nuclear power plants, and I support any effort in site remediation at any facility in the United States. And I'm very pleased to see that Idaho has taken the time and effort, because it's very, very difficult to do all this. And I commend all of you on your effort to take on this monumental task. So, I support you one hundred percent.

NOLAN JENSEN: Thank you. Any other comments?

CHUCK BROSCIOUS: Chuck Broscious, B-R-O-S-C-I-O-U-S, Environmental Defense Institute. I'm not convinced that the total mass volumes that you all are using as your base for what was disclosed of there is accurate. And in terms of the ramifications, if that number is not correct and how that would impact your risk ranges and whatnot is significant. And I would like to see some documentation on what you base those figures on, you know, to assure me that you're working from numbers that are pretty solid.

In terms of maintaining institutional control for hundred years, I think it's important to stop and think about what was going on in 1894. This was decades before even the automobile. This was before paved highways and this was during the time when people rode the trains around, a lot of them were wood fired. So, in terms of projecting, you know, another hundred years out there and making assumptions that there's going to be something that we call the United States of America is being very presumptuous. And I think we need to be thinking about these things when we just lay these projections

out there.

And again, I do not have a lot of faith in your characterization of how fast contaminants move from the surface to the groundwater, because I've had too much documentation, other geologists, hydrologists, and in and out of Department of Energy, Atomic Energy Commission, Energy Resource & Development Agency. You know, it doesn't -- you know, there's too much challenge in documentation. That's it.

NOLAN JENSEN: Anyone else?

WALTER BETWAY: Walter Betway (spelled phonetically.) I mentioned earlier the concern for technology transfer, and I think that still should be a very high priority and I don't think it's really being addressed. We're also not dealing with costs in a more detailed breakdown. If you're going to run the program two years and say it goes to three, can we work at automating this to reduce the labor cost and to let it do its thing even if it takes five or ten years without high labor costs?

We need to look at can we recover this organic vapor solvent and reuse it elsewhere as feed stock for something else? The reason being is that you may not have a lot here, but there is a lot in

other dumps elsewhere throughout the world.

And this reinventing the wheel does bother me a bit. I still think that, like you say, I don't trust computers, and just because the computer says this, I can also program computers to make any answer I want. And this is where I need -- feel, I should say, that software documentations should be readable and these programs should be described as what they do much more in the public domain. They're right now, as far as I know, almost no indication of this in the INEL Repository, or at least references to such. Part of the data processing which is not unique to INEL, it's throughout the whole computer industry.

I have yet to see an entity relation diagram, that's how to date and relate to each other. A contact's diagram for a data flow diagram, I've yet to see one of those anywhere mentioned. In other words, what are the inputs, outputs, and so forth described.

We're taking too much in faith that the computer model is accurate or even meaningful. I don't even know what the variables are that go into it or come out of it. All I can do is guess. I think that's unfair and also make it unuseful for

other projects in the future. There are other chemicals besides trichlorethylene and carbon tetrachloride, there's thousands of them. And eventually those will have to be addressed, but the processes will be the same.

So I'm looking at this equipment, whatever you're doing on this, to be useful and transferable and do a good job here, rather than do a, shall we say a least effort and then hopefully forgotten. You know, we did our project, we cleaned it up; but it's all lost like many of the other files and piles of reports and is unusable by anyone else. So record-keeping is still a critical area.

And I'd like to see those computer printouts, definitely as I mentioned before, be made much more readable. It's a failing that's not professional in my opinion. It's much -- I think hackers even can do better jobs on some of these printouts. And as you do such things, it will give the public confidence by making these things more readable rather than, shall we say, questionable because the AEC -- or Atomic Energy Commission or the DOE now has in the past, hid so much in secrecy or in records that are questionable in value.

And I'd like to see where it referenced to

where the data records are being kept in your Information Repository in computer form. Do you even have one, or is this kept in somebody's desk, third drawer down next to the garbage can? These are the concerns I would like to see INEL succeed and has to be dealt -- these problems have to be dealt with. And I'll quit at that. There are many other things.

NOLAN JENSEN: Thank you. And don't forget, any time until the end of the comment period you can submit written comments especially if you have other things you'd like to say. Any other comments tonight?

NEIL FARMER: Neil Farmer. I'm a student at the University of Idaho, and I see a few positive aspects and a few negative aspects. One positive comment that I'd like to make is towards people working on this problem, that at least we're coming to a conclusion for a remedial effort that is -- at least we aren't studying it to death as we are with the salmon issue. We all know where the salmon issue is now.

Some of the negative parts of the presentation is of course some of the data given by computer programs as mentioned. I just got through

with an assignment basically doing the exact same thing with a different program. And it is true, initial concentrations are extremely crucial, over what time period they are dumped into a pit, and the reactions with other chemicals. So this -- and a lot of this is completely unknown. And that's not even to mention the hydrologic factors of the aquifer, namely effective porosity, spurcivity (spelled phonetically), a good many others, that most, even well experienced and seasoned hydrogeologists most of the time have to virtually pluck out of the air because there is no hard data for that. And those are crucial inputs into the computer programs which will dramatically affect program, garbage in and garbage out.

What I'm trying to say is the input data is in essence so hard to get a firm grasp on the -- it's very difficult to have much reliance on the output of the computer program. But that's not to say that they are completely inadequate. They're only as good as the input in, and that's personal experience and from conversations with seasoned hydrogeologists, I suppose namely on the University faculty. So I suppose I have a few positive comments and a few negative comments.

NOLAN JENSEN: Anyone else?

JOE LANCE: Just a brief one if you don't mind. My name's Joe Lance, I'm a fisheries biologist or pathologist with U.S. Fish and Wildlife Service and I'd like to thank you for the opportunity at least to hear more about what the problem is. Having worked the last 20 years or more in the Hagerman Valley with fisheries' people and irrigators and agriculturists, I understand the importance of this aquifer. I guess my only comment would be I appreciate the opportunity to hear it, and the opportunity to respond. I wish I'd knew more about it such as many of the people here, but I have learned. And I would like to apologize for the mistakes that my generation made by drilling holes into the aquifer, and maybe through some of this cleanup, this won't happen, but we at least left it to our kids to clean up. I appreciate the opportunity to be here.

NOLAN JENSEN: Anyone else? Thank you very much. It's getting late, but we do need to get on to the other project. So we'll just take a brief break and you're welcome to go get some fresh air, whatever. We'll come back in about five minutes and talk about the other project.

(A short break was taken.)

NOLAN JENSEN: Before I introduce the gentlemen that will be talking about the second project, there's just two concepts I want to introduce very briefly again. The first of those is that they'll be talking tonight is the concept of presumptive remedy. And what that issue is, and they'll explain a little more later, is now that Superfund has been in effect for about 10 years, we're getting some experience nationally in how these cleanups are done. And we're finding that for similar types of contaminated sites, there is a similar cleanup that is usually implemented. And so this concept of presumptive remedy is that unless there is an unusual circumstance with this site, rather than spend the money studying it to death, we'll implement more of that funds toward the actual cleanup and move toward a remedy that has been shown to be effective or implemented commonly on other similar sites. So we will be talking about that briefly.

Another one is we're in our third year under this Federal Facility Agreement now, and when we started, we had about 400 sites that we needed to look at. Several of them were small sites and the

investigations were fairly limited, but we've completed a lot of those now. And now as we come out to the public and talk about proposed plans, those proposed plans will likely contain one project with several other smaller projects included with them. And that's something you'll be hearing a lot more about as we come out in the future.

So with just those two concepts in mind, I'd like to present now the Naval Reactors presenters. First is Dary Newbry, he's with the Department of Energy --

DARY NEWBRY: Office of Naval Reactors.

NOLAN JENSEN: Office of Naval Reactors. And then Rick Nieslanik with Westinghouse will be presenting as well.

DARY NEWBRY: First I'd like to thank everyone for coming this evening and welcome you to the first public presentation specifically for an environmental cleanup project at the Naval Reactors Facility. And throughout this evening, we'll be referring to Naval Reactors Facility as NRF, that's the acronym. Before we specifically talk about the cleanup projects, the industrial waste ditch and historical landfills, I'd like to give you some background of NRF.

NRF was first established in 1949 as a testing site specifically for the naval nuclear propulsion program. And since then, our mission has been twofold, to train sailors for the nuclear Navy, and to conduct research and development. NRF is located in the -- as you can see, in the west central portion of the INEL approximately 54 miles west of Idaho Falls. It consists of 84 developed acres, and the developed acreage is what's within the fence line. We do own the property -- or we use the property and claim it to be ours outside of that fence line, and we perform monitoring and conduct research out there.

But NRF consists of 84 developed acres, 3 training facilities: S1W, A1W, S5G; and the Expended Core Facility, ECF. Little bit about the facilities, S1W: S being submarine, 1st design, Westinghouse. S1W was the first nuclear reactor designed, developed, and constructed for the Navy. It was the first prototype model, it was used in the first nuclear submarine, U.S.S. Nautilus. Built in '49 and operated for nearly four decades when it was shut down in 1989.

The second training facility constructed was the A1W prototype training model. A standing for

aircraft carrier, 1st design, designed by Westinghouse. It was built in 1958. It was recently shut down this past January. It was used in the first nuclear powered aircraft carrier, the U.S.S. Enterprise. So both of these facilities are now shut down and no longer operational.

The third training facility S5G: Submarine, 5th design, General Electric, was constructed in 1965. It is currently scheduled to be shut down next summer. And right now it is the only operating nuclear reactor plant out at our facility.

The fourth facility which is not used for training is the Expended Core Facility. It's used to receive, inspect, and conduct research on spent Naval nuclear fuel, support components and materials.

The population over the years at NRF has ranged from 1500 to 3000 personnel; both contractors, Navy, subcontractors, DOE. And because of all the people here that they support and it's a self sufficient facility, we have services like a cafeteria, we have a carpenter's shop, metal works. All those services that you would have in a small community. We have bunking quarters, people stay there around the clock. They continuously stand watches at the facilities and perform different

tasks.

Because of that, it is no different from a small community, and we have those same waste streams which you would find in a small community. Liquid and sewage waste water discharges and routine garbage that goes to landfills from small municipals.

And that brings us to the two areas of discussion we're going to talk about tonight. The Industrial Waste Ditch, that was an area we investigated due to historical discharge practices of waste water that was sent to that ditch. Certain organics, inorganics were discharged to the ditch. We've had -- this is a nonradioactive ditch. I'll come right out and tell you that. We do not discharge -- have not discharged radioactivity to that ditch. This is all nonradioactive -- all of tonight's investigations are nonradioactive sites.

The Industrial Waste Ditch received waste water discharges from support facilities throughout the site, the prototype plant specifically, the training reactors. The discharge they received from those plants would be support systems and components that are cooled by those kinds of systems on the actual ship or submarine which would be cooled by a sea water system. Since we don't have an ocean out

there in the desert, we simulate sea water systems by pumping water up out of the ground, having it in a closed loop circulating water system which sends the water out to cooling towers, cools the water down and sent back in. It would be recirculated up into the submarine hole as a sea water system would on a submarine or a ship at sea and then sent back out to the cooling towers to eventually heat the desert. That's where the heat is dissipated. So those kinds of water discharges went in the Industrial Waste Ditch.

The other areas of investigation, historical landfill sites. We suspected nine historical landfill sites in the initial investigation phase and found out that there were only four landfill sites. And when I'm talking landfill sites, I mean municipal-type landfill wastes, not radioactive waste; cafeteria garbage, office waste, construction debris, concrete, lumber, those kinds of things. So we did identify four different sites and we'll discuss it later on.

In fact, I'll turn it over now to the Westinghouse Electric Corporation Waste Area Group Manager, Rick Nieslanik.

UNIDENTIFIED SPEAKER: Just one comment. A

person might think, based on your presentation, that the Navy is not generating any radioactive waste when in fact you've dumped between 8 and 9 million curies in the burial grounds. Now that doesn't have anything to do with this -- I just wouldn't want anybody to think that the Navy isn't generating. Is actually the highest generator of radioactive waste to the burial grounds.

RICHARD NIESLANIK: And in fact that, I think is a very crucial point as to why these areas we're going to talk about did not receive radioactive waste, because there have been very good records kept on what actually did go to the RWMC. And another facility, another area here that we'll be discussing at another time where we know we discharged radioactive liquids.

So the things we're talking about tonight are the nonradioactive discharges. Other discussions at a later date, we'll talk about radioactive discharges, and the RWMC talks about the radioactive -- solid radioactive waste that was shipped down there for disposal. So, you're correct. The Naval Reactors Facility has sent radioactive material down to the RWMC.

But right now, I'm going to talk about our

Industrial Waste Ditch and the work that was conducted out there to investigate it. As Dary mentioned, the water that is used on the site for cooling is collected along with rain water and water that's used to regenerate water softeners, those types of uses. It's collected in a network of pipes and channels on the site, channels to the west edge of the site, and then it comes along in a buried culvert to this point where it enters the ditch.

The ditch, as you can see, follows an old streambed. It extends for about 3.2 miles out into the desert, but historically, the water has only flowed in the first two miles before it soaks into the ground or evaporates. Currently, because of the reductions in operations, the water only flows about the first mile or so of the ditch.

The water that's been discharged is primary cooling water, but it has contained solutions that contain contaminants such as chrome, silver, mercury, oils and other impurities.

During the life of the ditch which is from about 1953 to present, it's still operating, the ditch has been dredged. The sediments in the bottom of the ditch were picked up and set on the banks of the ditch. The sediments that are currently in the

ditch and the dredge piles that line the ditch were the focus of the investigation. We wanted to identify what contaminants were in those sediments and dredge piles, where their locations were, and what the concentrations of those contaminants were.

We also wanted to identify the migration potential of those contaminants. So we drilled a series of bore holes in a line perpendicular to the ditch at several locations along the ditch. That allowed us to get a picture of what contaminants were down here, and we also collected samples at various depths, analyzed those for the contaminants of concern, as well as to get soil characteristic data, use that then in future migration predictions.

During the investigation, we also took samples of the groundwater, the Snake River Plain Aquifer, and also some other smaller zones where we detect water during our drilling operations. In all cases, the samples that we collected showed no contaminants above the drinking water standards.

We did some models to predict the migration of these contaminants down to the aquifer, we assumed that all the contaminants that were in the ditch sediment, and in fact we took a block of soil that looked at the maximum depth at which we found a

contaminant, times the length of the ditch and the width of ditch, times the concentration that we found, the highest -- the average concentrations that we found, and assumed that all of that, all the contaminants in that area would migrate. Even based upon those types of assumptions, we still predict that the concentrations in the Snake River Plain Aquifer in the future, even at peaked concentrations will not exceed the drinking water standards.

The soil samples that we took in these dredge piles and in the sediments identified --

UNIDENTIFIED SPEAKER: You've mentioned the contaminants that might migrate. What were those?

RICHARD NIESLANIK: I was just about to say that. The sampling that we conducted in the sediments and the dredge piles identified eight contaminants of concern: Chrome, barium, silver, copper, nickel, zinc, lead, and mercury.

UNIDENTIFIED SPEAKER: Which of those are the most mobile?

RICHARD NIESLANIK: Off the top of my head, I don't know. I think the one we found -- we found them at various depths. And the deepest one being at eight feet. Can I answer that afterwards? I can go look it up, it's in our report. I believe it's

mercury, off the top of my head. Chrome is in two different states, hexavalent chrome and trivalent chrome. Hexavalent chrome is very mobile, trivalent chrome is not. So those are some things that I can discuss by looking at the text but I don't have those in front of me.

Based on our predicted models, again, we did not anticipate any other getting to the aquifer at contaminant levels, above drinking water standards.

Those eight constituents that I identified were the eight constituents that we evaluated during our risk assessment. The risk assessment starts with a calculated estimate of the exposure that a person could receive from the contaminants that we found.

We looked at three different types of individuals. First, we looked at a worker who may come in contact with the soils and sediments. We looked at a resident who could eventually at some time in the future build a house on the bank of the ditch, and we looked at an agricultural resident who could farm the area around the ditch, grow fruits and vegetables, raise cattle and dairy products in that area.

Currently, this area along the ditch is not accessible to people for building residence; however,

in the future, it could be released, institutional controls. We do not try to predict how long those institutional controls would be in place. We just said that in the future someone could live here, and if that's the case, these are the risks that we would expect to see. As part of the risk estimate, we also look at the exposure pathways. Inhalation, absorption through the skin due to contact with the soils, and ingestion of fruits and vegetables, dairy products, meats, that were grown in and raised in these sediments -- or these dredge pile soils on the banks of the ditch.

When doing the risk assessment, we looked at the toxicology of the various contaminants of concern. Again, as Nolan mentioned earlier, you have carcinogenic risk and you have noncarcinogenic risk.

The highest carcinogenic risk found is due to inhalation of dust, primary contaminant of concern there is hexavalent chrome. The risk value that was calculated was 1 in 70 thousand. Again what that number represents is that if 70 thousand people receive that level of exposure, and I might also point out here that this is based on a lifetime exposure. Someone building a house on the bank of the ditch and living there essentially for 30 years

which is a consistent time for somebody to live in a particular area. So based upon a 30-year exposure, the hazards -- or the risk associated with that would be 1 in 70 thousand. Again, if 70 thousand people receive that level of exposure throughout their lifetime, you would expect 1 additional case of cancer above the national average.

Noncarcinogenic risk. The highest calculated noncarcinogenic risk is due to the consumption of fruits and vegetables grown in the dredge pile soils. That's a hazard index of 1.3. If we looked at the hazard index of growing those same fruits and vegetables not in the whole area, but rather focusing on those areas that have the highest concentrations, that hazard index thing goes up to 2.2.

Again, a hazard index of 1 represents that with a high degree of certainty, anything below that -- there's a very high degree of certainty -- that there will be no adverse health affects due to that level of exposure. As you get above 1, such as we have here, 1.3, 2.2, what you have is a lower level of certainty that no adverse health effects will be experienced.

Based upon the sampling data and the risk assessment data, the agencies see no justification in

performing any action at this site. They're proposing tonight, recommending that no further action be taken at this site and that the area poses no unacceptable risks.

Before I go on to the next project, I'd like to now stop and ask if there's any questions specifically about this because now I'm going to change and talk about the other sites.

NOLAN JENSEN: We'll have a question and answer period at the end too, so this isn't your last shot at it.

UNIDENTIFIED SPEAKER: What are the options? You recommended no action, what were the other actions?

RICHARD NIESLANIK: In the case of a no action site, the National Contingency Plan does not require, I guess, to go off and look at other options. So we did not do a formal detailed evaluation of a whole bunch of different options. Once we looked at the no -- once we looked at this data, and it says, gee, there's no reason to go do one, we didn't do a detailed evaluation of all those actions. Some of the actions that -- you know, were considered in a preliminary phase, I'll say, were removing sediments to an isolated location, scraping

them all up into a pile at the end, putting a cap over that, filling in the ditch. It's currently in operation, so we would have to then build another water disposal facility.

So basically those are the ones we looked at. Filling it in, moving them to the end of the ditch or somewhere, capping those, and no action. But again, a detailed feasibility study was not done on that because of the no action indications.

UNIDENTIFIED SPEAKER: So you didn't even consider developing a different ditch so that you wouldn't be continuing to add water to at least those contaminants, you know, and washing it --

RICHARD NIESLANIK: We did consider it. I hate to say we didn't even consider it. We did not do a detailed feasibility study. Dary mentioned earlier that S1W recently shut down, A1W recently shut down, and S5G is going to shut down. Historically, the discharge in that ditch has been a hundred and 70 million gallons a year, rough numbers. Once S5G shuts down, the flow rate in that ditch is going to drop from a hundred and 70 million gallons a year to somewhere in the neighborhood of 6 million gallons a year. That 6 million gallons a year is primarily runoff and water softener

regeneration; because these cooling systems, which are the biggest contributors to the flow in the ditch now, go away. Two of them have already gone away, the third one is going to go away. So the flow in that ditch is going to decrease significantly.

UNIDENTIFIED SPEAKER: Can you give us some ballpark numbers on concentrations in the more contaminated portions of the ditch?

RICHARD NIESLANIK: I'm shooting from the hip here, and I'm going off the top of my head. The average concentration of -- one other thing I'll mention. The contaminants we listed: Chrome, copper, nickel, zinc, mercury, those are all natural occurring materials. However, we found them in concentrations that were higher than we would expect to find in undisturbed soils. But the average concentrations were not significantly higher than the average concentrations of background. We had spikes, areas where the concentrations were higher. Average concentration for barium, for example, roughly 250. We had concentrations as high as 280, 290.

UNIDENTIFIED SPEAKER: Background for barium?

RICHARD NIESLANIK: Average concentration for background is 250, 260; and we found them in 280,

290. Chromium, average concentrations for chrome in background would be somewhere around 25 to 35. We found chrome as high as 1800. So chrome was fairly high. Mercury, the average concentrations --

UNIDENTIFIED SPEAKER: What are your units?

RICHARD NIESLANIK: Parts per million. Mercury, average concentration for mercury is very low, less than 1 part per million, point 1, I believe. And we found concentrations in the range of 1.5 and some even higher than that for mercury. Those were the primary ones. Zinc, copper, nickel, lead, were all, again, some concentrations above background concentrations, but the average concentration being very close to the average background concentration. Again, if you see me afterwards, I've got a book -- I've got all those listed. I just don't happen to have them in front of me.

DARY NEWBRY: Are there any other questions on the ditch?

UNIDENTIFIED SPEAKER: What was the annual discharge rate to that ditch did you say?

RICHARD NIESLANIK: Roughly a hundred and 70 million gallons a year.

UNIDENTIFIED SPEAKER: What was the source of

the metals?

RICHARD NIESLANIK: The chrome which is the one we found in the highest concentration, the cooling systems used a potassium chromate, rust inhibitor from about 1953 to 1965. And in '65, they realized that chrome was probably not a good thing to be using so we discontinued using chromate -- potassium chromium as a rust inhibitor. Mercury and silver were used in a chemical analysis process. Used mercury, mercuric nitrate, silver nitrate to check the purity of the water, then those reagents, the lab artifacts were released to the ditch. And some of the others were water treatment -- barium was used in the water treatment process. Copper, nickel, lead were leachates from some of the piping that was used in the water systems. Any more on the ditch?

UNIDENTIFIED SPEAKER: What was the form of the metals? Did they precipitate out of the bottom of the ditch?

RICHARD NIESLANIK: The form of the metals currently in the ditch are basically organic form -- are inorganic form. When it was released, again, the chrome was released as potassium chromium, that was the form of it. Currently, the sampling that we did there identified as primary trivalent inorganic

chromium. The mercury, we did not analyze it for specific form.

UNIDENTIFIED SPEAKER: That was a total mercury?

RICHARD NIESLANIK: That was the total mercury. In our risk assessment, now that you've mentioned the forms of those, a lot of assumptions have to be made on the form of the metal, and that affects how it migrates, something that you mentioned earlier.

Basically we assumed the worst. Mercury is -- since we didn't know exactly what the form was, we assumed it was an organic form -- organic methyl mercury which is the most toxic form of mercury, based on our risk calculations on that, methyl mercury referenced dose, therefore giving us a higher degree of certainty that the risk numbers we calculated were below health effect levels. More on the ditch?

I'm going to shift gears now and I'm going to talk about landfills. When we started this project, we identified nine separate areas that we suspected could have contained buried waste. The identification of these nine sites are based on aerial photographs, conversations with long-term

employees. We went out then and looked at those sites, gathered up all the photographs we could find of historical records, and found that five of these nine sites did not contain buried waste. You could follow the photograph sequence and see that they were used for other things, parking areas, staging area, on and on and on. And investigations at the site showed that nothing was buried there.

Four of the sites, this one over here, here, here, and this small one right here, were investigated in detail. Details that I'll describe in a few minutes. This one is -- back up just a second. These sites that we found no buried waste in, the agencies are recommending no action for those. In addition, this site, which following the investigation, the sampling, the analysis of that data, and predictions of migration, et cetera, following investigation, the agencies are also recommending no action on this site. So the action that we're going to be talking about is primarily identified for those three sites.

We mentioned earlier, Nolan did in his discussion, the concept of a presumptive remedy. Presumptive remedy is based on using past remedy selections and proven actions to select your remedy

rather than necessarily spending a lot of time and effort on sampling. Problem with a landfill is that they're not homogeneous. A sample taken at any location in here may or may not be representative of a sample taken at another location, because it's very costly and almost impractical to fully characterize what's in that landfill.

The EPA, since there are so many municipal waste landfills across the country, went off and took a list of all the municipal waste landfills on the national priority list, took a random sampling of those, evaluated the remedy selected for each of that sampling, and found the containment of the waste in place with some type of cover and groundwater protection or groundwater monitoring was used at every single one of those sites. No other remedy was uniformly used at all those sites. The EPA then identified containment in place as the presumptive remedy for municipal waste landfills.

The types of waste that you would expect to find in the municipal waste landfill, construction debris, cleaning agents, scrap metal, kitchen waste, paper waste, paint waste, household industrial chemicals, those are the same types of waste that we have in the NRF landfills. We did not sample into

the contents of the landfill. Instead, the investigation used records to determine what things could have been buried in there. Records were not specifically kept of every load of stuff that went out to these landfills. They were in operation from 1953 until 1970. However, records were kept of the waste that was shipped down to the Central Facilities Area that we may have seen on one of those earlier maps. Of the Central Facilities Area landfill, they did keep records. The waste that was shipped from NRF down there between '70 and '80, we feel is representative of the same types of wastes that would have been buried between '53 and '70. The reason being, the process they used, the mission of NRF did not change over that time, it was still basically the same, a training facility for sailors, research and development ECF.

Based on that, we went off and looked at those records and identified what things we felt could be in that landfill, we estimated the quantities that could have been dumped in there during that time, and did some quality risk assessment based on that and some predictions of what could have migrated to the -- what could migrate to the aquifer. But, that risk assessment is not the

primary driving force in the remedy selection. With the ditch, the risk assessment was the primary driving force. Here the primary decision point on the remedy selection is the presumptive remedy concept. Rather than go spend a lot of money doing a lot of sampling and still not feel necessarily comfortable that you know everything that's in there, we want to take -- move to an action and use what's been selected at other locations in order to select our remedy.

Within the context of the presumptive remedy, we identified three alternatives and did a detailed evaluation of those. First alternative was a no action alternative. In that case, we would leave the landfill contents in place, we would use whatever existing cover is there, and we would do no sampling or monitoring for long term controls.

Containment with a native soil cover was the second choice. There again, the landfill contents would remain in place. We would go and design and install a native soil cover with vegetation to control erosion and runoff. We would perform groundwater and soil gas monitoring long term into the future. We would survey and fence and use land restrictions on the area. And the estimated cost for

that is a maximum of 2 million dollars.

Choice number three, again, landfill contents remain in place, groundwater monitoring, soil gas monitoring, fenced, survey, land use restrictions are all the same. The difference is, is an engineered clay cover rather than a native soil cover. Estimated cost of that, maximum 7 and a half million dollars.

At the start of the evaluation, we identified our goals, our objectives for this action. They consisted of preventing access to the landfill in the future. Since we don't know what's there, we can't, without qualifications, say that there's no risk there. So we want to prevent someone from digging into there. Second one was to reduce the migration potential. The way you reduce the migration potential is with a cover to prevent the water from infiltrating into it. The third one was to protect the groundwater. The monitoring programs that we describe here are geared to protect that groundwater. The fourth objective was to meet the regulations, the relevant and appropriate and applicable regulations associated with it.

Alternative number one does not meet those objectives. The existing cover may or may not reduce

the infiltration, the landfill contents remain in place but there's no restrictions for future use of that and there's no monitoring of groundwater so there's no protection of the groundwater.

Alternatives two and three both meet all of the objectives. The primary difference between the two is that engineered cover and the cost. Preferred alternative of 2 million dollars is based primarily upon that cost and the fact that that alternative does in fact meet all of the objectives.

I've talked about two different things here, the ditch and the landfills. On the case of the ditch, the agencies are recommending no further action. On the case of the landfills, they're recommending no further action on six of the sites, and they're recommending containment with a native soil cover on three of the sites. That really concludes the details of the presentation and now I'd like to open it up for questions.

UNIDENTIFIED SPEAKER: Currently there's no native soil cover and vegetation over these sites?

RICHARD NIESLANIK: Actually, this picture is fairly clear and you can see it. This area right here does not have native vegetation. It has native soil, but it has a lot of construction debris and

different things loose on top. During our sampling program, we identified up as much as four feet of cover over most of the landfill contents. However, it's not contoured and it doesn't control the runoff, there are low spots where water sits, and it's not a designed cover.

Certainly here, this area has some low spots and if you look closely at this picture, you can see some dark spots here, and those really are low spots. And again, the cover design has to be set so that it channels the water away from the landfill contents. So by native soil, yes, it has native soil; but it's not really a cover.

UNIDENTIFIED SPEAKER: There's an awful lot of landfills in the country that aren't going to have this much done that are already closed, and yet you've selected to do this without any sampling evidence? I mean, do you have any -- apparently, you've got ideas based on paints and other organics that may be in there.

RICHARD NIESLANIK: Right. Our investigation of what was buried indicated pretty clearly in our minds what things could be there. Paints, lead based paints, chrome based paints. Potassium chromate was used in the water system, there's probably some

powdered potassium chromate that was disposed of in there, trace amounts in the bottoms of cans, those types of things. The records at NRF clearly indicate that the solvents and the organics that we talked about down at the other project were not used. And if so, they were in very small quantities. It was never purchased in anything bigger than a five gallon can type thing.

So we have indications that there are very small amounts of things in there, but in order to substantiate that, we'd probably spend more money than what it's going to cost us to go fix it. And rather than spend that money to sample it, let's go put the cover on it and monitor it.

UNIDENTIFIED SPEAKER: But you don't have the groundwater and soil gas monitoring systems in place now.

RICHARD NIESLANIK: We do not.

UNIDENTIFIED SPEAKER: So you don't know if there's any --

RICHARD NIESLANIK: Well, let me back up. Our sampling effort on these was to take soil gas samples. We did a -- we gridded this off on each one of these and we took 50, 60 soil gas readings at each location, found that there are some organics coming

off of there. We looked for benzene, toluene, xylene. But we also found that those things are -- were in our blank sampling. So it was difficult to truly quantify what's there.

Soil gas samples give you an indication of what's there, but they don't give you a concentration to base your risk on. So, yes, there's indications that there are things there; no, we didn't try to quantify those to zero in to come up with a risk and say, gee, we don't need to do anything here because the risk is okay. And that's part of the concept of presumptive remedy, is to save the money you would spend on that sampling effort.

UNIDENTIFIED SPEAKER: I might have missed something, but is not -- I guess this native soil cover will reduce the amount of infiltration which will go through the landfill directing surface runoff (inaudible.)

RICHARD NIESLANIK: Right.

UNIDENTIFIED SPEAKER: Is that enough protection to prevent generation of any leachate or other that might continue to carry on (inaudible.)

RICHARD NIESLANIK: We believe it is. Main reason because, one, the rainfall is, in the areas, very low. So we don't expect a lot of moisture

infiltration. The second issue is this landfill has been in -- has been closed for 30 years, roughly.

There was some work done in this area in 1984 to look at it as a possible site for a new building. They went in with a backhoe, started digging trenches to see what was there. What they found was garbage, but they didn't find leachate, they found garbage.

We also have bore holes in the area that show that although it's not uniform and it's not consistent, there's a clay layer. If you look at a -- if you remember the cross section drawing of the Vadose Zone, there's several different layers there. And in this area, especially in this area right here, there is a clay layer beneath it which would help prevent any leachate that might come up, which there could be some, but we don't believe there would be either. Please keep that in mind.

UNIDENTIFIED SPEAKER: So there has been no attempt to monitor the leachate from the -- below the landfills.

RICHARD NIESLANIK: Leachate specifically, no. We do monitor the groundwater. There is a network of groundwater monitoring wells all around the site. We routinely monitor that. The United States Geological Survey does a lot of that

monitoring for us, and we share that data. And none of that monitoring, although as imperfect as it may be, none of that monitoring has ever indicated any contaminants migrating out of here into the aquifer. Again, these have already been closed for roughly 30 years.

UNIDENTIFIED SPEAKER: Did you say your background samples contained benzene? Background soil vapor gas samples contain benzene?

RICHARD NIESLANIK: I didn't say background -- well, maybe I did say background. Our blanks. During the sampling, we took blank samples, we sent those blank samples with our samples to the lab. When the lab analyzed the blanks and they analyzed our samples, they found benzene in both. Xylene was another one that we found, consistently found.

UNIDENTIFIED SPEAKER: So those are laboratory contaminants then?

RICHARD NIESLANIK: Could be. We did not say, hey, we're not going to do anything because they're laboratory contaminants, but it certainly made the data more uncertain.

UNIDENTIFIED SPEAKER: Did you collect background samples to see -- I guess, blanks or --

RICHARD NIESLANIK: See, background soil

sample, you find an undisturbed area and you take a sample. Now your background air sample, I mean a lot depends on where you take --

UNIDENTIFIED SPEAKER: It should be a blank, right?

RICHARD NIESLANIK: But it's a blank, essentially, yeah.

UNIDENTIFIED SPEAKER: So that should have showed something too.

RICHARD NIESLANIK: We took -- we drew some air over here, and what we did was we tried to find -- you know, the day they took the sample, prevailing winds this way, they came over here and took that blank. Next time, next day they were out there sampling, the prevailing wind was this way, they took their blank over here. They tried to get a blank away from the location that they took the sample, and yes, they did find those in the blanks. So that implies that it's a laboratory artifact -- or could be a laboratory artifact, I should point that out. Could also be a truck driving by.

UNIDENTIFIED SPEAKER: So your data -- they weren't high enough to invalidate your data then?

RICHARD NIESLANIK: They were high enough to indicate that there may not be any of those

contaminants there.

UNIDENTIFIED SPEAKER: Who did the analysis?

RICHARD NIESLANIK: Most of that analysis was done by Golder & Associates. They were the contractor that collected the samples, they shipped them to the Redmond Washington Lab and they were done there. We also took confirmatory samples and shipped those to a separate lab. And both labs came up with the same types of readings.

UNIDENTIFIED SPEAKER: So it suggests they aren't laboratory artifacts then. What's your background -- your blanks that have benzene in them, can you say what those might have been, the range of those things?

RICHARD NIESLANIK: Not off the top of my head, but again, I have the report with me.

DARY NEWBRY: This will be in the same report that we can show you all at once, we have that.

MARGIE ENGLISH: Rick, also, when you look at the data, I don't recall it being benzene, but definitely xylene. The ones that -- for at least the one of the landfills, when you looked at the blank data, you had a concentration, and then when you look at the landfill data, at least for site 1, the concentrations that were found in the landfill

samples were considerably higher than what was in the blank. In one case, by an order of magnitude. So that would indicate that yeah, there may have been some quality control problems with the analysis itself, but it looks like something is definitely, like the xylene, is definitely in the landfill.

UNIDENTIFIED SPEAKER: For your alternative number 2 with the price tag of 2 million dollars, how long of a time frame is that going to entail?

RICHARD NIESLANIK: That's based on monitoring for 30 years. And basically, the primary cost is installing the wells and installing the cap. Once you do that, you have quarterly, annual samples that you have to collect and ship off to a lab, which runs, you know, a few thousand dollars a year for a long period of time. But the primary cost of that is in the initial installation of monitoring wells and caps. That's -- you know, when you do that kind of an estimate, you have to project into the future with discount factors to decide what the cost of analysis is going to be in 30 years, but that's the process.

UNIDENTIFIED SPEAKER: I even think 2 million dollars, that's a pretty good price, really.

MARGIE ENGLISH: And I want to clarify something too. Rick did say that they have monitored

groundwater, but we've also felt that the monitoring system isn't -- it's not specifically designed -- the one that's in place now, it's not specifically designed to address these landfills. So as part of the remedy, we intend to put some wells in what we consider to be better locations to monitor these landfills.

UNIDENTIFIED SPEAKER: But that's not going to up the price.

RICHARD NIESLANIK: That's included in the price.

UNIDENTIFIED SPEAKER: Where are the existing wells located approximately?

RICHARD NIESLANIK: One is located roughly -- this is an older picture. It shows up in some of the newer pictures. Right down in here (indicating.) There's one that's up here. Mostly intended to -- and then there's a series of three of them down off of the bottom of the map.

UNIDENTIFIED SPEAKER: What's the direction of groundwater flow?

RICHARD NIESLANIK: The regional flow is southwest. This is north. Regional flow is southwest. And I point out regional flow, because there's a whole series of wells on the INEL. And you

can take and you can look at the hydraulic head, the depth to the water table at all these different locations. And what you can see is that there's -- it changes from year-to-year based upon how dry, how much infiltration is coming from the Big Lost River. Big Lost River's down here, Little Lost River is up here. If the Big Lost River is dry, the Little Lost River has a bigger impact on the recharge, and therefore you see a shifting of that locally around NRF, but not necessarily in the regional aquifer. And so that's part of the imperfectness of the monitoring. These wells down here would certainly pick it up well when the flow is in fact directly southwest. During dry times when the flow may be more to the east, southeast, may not be monitoring that as well as we could. This one we feel is monitored fairly well because we have one close by just south of it.

UNIDENTIFIED SPEAKER: How many wells are you recommending that you install?

RICHARD NIESLANIK: That's based on four wells, that price is.

UNIDENTIFIED SPEAKER: What about the soil gas monitoring, what does that entail?

RICHARD NIESLANIK: The soil gas monitoring?

UNIDENTIFIED SPEAKER: Are you going to sample out your water wells?

RICHARD NIESLANIK: No -- well, that again is part of the design phase. We haven't not gone off and designed our soil gas monitoring. Primarily, that is monitoring -- soil gas is coming off the surface, not subsurface soil gas monitoring, but surface gas monitoring. Because that's really what we're trying to protect. We're basically assessing the quality of our cover. Is the cover keeping those, whatever soil gases there, below the surface or are they coming up? Is there enough off gassing of that landfill that we could have vapors in the air that would be a problem.

UNIDENTIFIED SPEAKER: So you're not looking for aquifer protection with these soil gas monitoring samples.

RICHARD NIESLANIK: That's another portion of it, and there we're looking at Vadose Zone monitoring. Again, the design of that is not complete. We haven't worked that out. The intent was to do that in conjunction with the groundwater monitoring either through the monitoring wells or some other method based on that. But yes, there would be a Vadose Zone monitoring component to that.

JOEL HAMILTON: I'd like to come back to the industrial waste ditch and the no treatment recommendation. I'm still struggling with the implied -- or assertion that it's okay to have the continued six million gallons per year or whatever, which presumably would consist largely of site runoff and so on, continuing to go through this area. To me, I guess, I'd have to know a little bit more about the costs involved of possibly relocating where the site runoff could go versus leaving it here. If it costs a few thousand dollars to relocate it, why don't not relocate it versus -- you know, if it costs a million dollars to relocate it so it no longer runs through the polluted ditch, why, that's a different story. So I guess it's a question of what the geography is and what it would cost to convince the site runoff to go somewhere else.

RICHARD NIESLANIK: I don't have those numbers, certainly can work those out. I guess what I'd like to do on that is put that as a comment and then we can respond to that in a responsive summary. Which leads into.

NOLAN JENSEN: Are we done with the question and answer?

UNIDENTIFIED SPEAKER: I just have one more

question.

NOLAN JENSEN: Just before that, if you want to make that a comment, would you give your name, please.

JOEL HAMILTON: Yes, Joel Hamilton.

UNIDENTIFIED SPEAKER: When you said that coolant water was put in the ditch, you said primary coolant water.

RICHARD NIESLANIK: No, I didn't. I hope I didn't.

UNIDENTIFIED SPEAKER: Yes, you did.

RICHARD NIESLANIK: Primarily coolant water. What I said was it was primarily from the cooling systems. Big difference. Does that answer your question?

UNIDENTIFIED SPEAKER: Oh, yes. It clarified it very well. Thank you.

DAVE HOVLAND: We might be able to clarify one of the questions I think that you had on the risk. Do you want to take a stab at that?

MARGIE ENGLISH: Well, Jeff, you might be able to help us here with this. But with the circular process and initiating an action, we really need to see the risk, and we're not really sure that that's -- I mean it doesn't appear like that risk is

here.

JEFF FROMM: Was your question relating to the risk number that presently exist or are you concerned that through the continuing operation of the ditch, there will be an addition to the material and that the risk numbers when the ditch is finally closed might be different?

UNIDENTIFIED SPEAKER: Well, I guess I was more concerned that even with the shutdown of most of the facilities, the continued flow of site runoff and so on could cause migration of pollutants. And, you know, you haven't told us what the extent of risk of migration is, so I don't know how --

RICHARD NIESLANIK: Oh, maybe I didn't make that clear. We did model that. We assumed that there would continue to be a hundred and 70 million gallons a year discharge to that. And based upon that, and earlier in the previous project, they talked about migration -- the length of time to get from the surface to the aquifer. With a hundred and 70 million gallons of water dumped into that ditch, the time is fairly short, it migrates quickly. That was the basis for our modeling, was full flow forever, essentially. And then we looked at what the peak would be. And the peak varied from constituent

to constituent, and based again upon the assumptions that we make on the solubility of the materials and the adsorbtive characteristics of the soil and all that. Based upon that, that full flow, a hundred and 70 million gallons of water a year, we still did not predict that the contaminant concentration in the aquifer would exceed the drinking water standards. Maybe that answers your question, why we didn't proceed with working at the cost of changing it, because even if it does continue to do it, we still would not predict the migration to be -- impact the aquifer. In fact, one of the calculations when we went through that showed that the concentrations -- some of those constituents would be less than what they currently see in the aquifer just the background concentrations. So, again that's the predicted --

UNIDENTIFIED SPEAKER: It's water cleanup program?

RICHARD NIESLANIK: We don't believe it's a cleanup program currently.

UNIDENTIFIED SPEAKER: Just to pick up on where Joel left off. You know, if the water being discharged into that ditch has contaminants in it, you're in violation of the Clean Water Act, and it should be going into a lined evaporation pond than

continuing to go into that ditch.

RICHARD NIESLANIK: Currently, the water that's discharged since 1980, as a matter of fact, does not contain contaminants. These are historical contaminants that were deposited in earlier days. When the RCRA laws were passed in 1980, we went off and looked at what contaminants were being discharged in the ditch, identified that there are no hazardous constituents being discharged in that ditch and they haven't been for some time. They were, of course, in the past. So, the water currently being discharged is not increasing the problem. Certainty could be increasing the mobility, but not adding, not depositing any more constituents to that.

MARGIE ENGLISH: And the risk to the groundwater from the mobility of continuing to use the ditch does not appear to warrant digging a new channel, it doesn't appear like there's that driver to proceed in that direction.

RICHARD NIESLANIK: One other thing. We certainly have completely separate from this remediation effort. We certainty have site improvement programs going on. And one of the things that we are looking at and planning to do is to modify and improve our drainage system,

dah-ta-dah-ta-dah, and put a retention basin in that system so that the water going out to that ditch, should something happen, there was a spill or something, we could trap that to prevent any future releases, even accidental-type releases. But that's completely separate from any remediation actions that we feel we need to do.

UNIDENTIFIED SPEAKER: Presumably, you could even put some sort of a closed or lined ditch in there so that the water passed on through the contaminated portions before it would be discharged.

RICHARD NIESLANIK: That could be done.

DAVE HOVLAND: But didn't you mention that the modeling with even a higher amount of water flowing in there hasn't caused any problems?

DARY NEWBRY: If those contaminants posed a risk, yeah, that would be something we would look at.

UNIDENTIFIED SPEAKER: I'd like to address that for a second, I guess as a question. We've gone through three different scenarios here tonight where we've talked about risks with respect to each of the scenarios separately. And each of the scenarios have talked about groundwater effects, and the effects on the groundwater are not separate, they do tend to be cumulative. So, I tend to worry a little bit about

saying that the actions that one might take at this particular site will not violate water standards when there is some degree of cumulative effect.

RICHARD NIESLANIK: I would like to address that. As Nolan mentioned, there are several different waste area groups at the INEL. Certainly there are cumulative risks associated with the fact that all of these are in one location. The divide and conquer concept that we have established is you go and look at each one of these individual problems separately and deal with those based upon the merits of that unit as a separate issue.

There is another one, Waste Area Group 10, which does not show up on here. But the purpose of that area is to go look at just that issue. Based upon all of these different models that were done, all the different discharges to the aquifer, it all adds up on a cumulative point of view, what is the impact into that aquifer. We certainly can't do that at this point because we don't have it all. But that will be the last item that's done here is to go look at all of those cumulative impacts so that that very concern that you have is addressed.

UNIDENTIFIED SPEAKER: I guess my point is, that the fact that an individual site does not itself

cause exceeding groundwater standards of pollution. The fact that that does not happen at one particular site does not get you off the hook.

DAVE HOVLAND: You're talking about an operable unit within a facility, and the idea there is that there will be a cumulative comprehensive RI/FS done for NRF to ensure that there aren't cumulative risks, right?

JEFF FROMM: Yeah, all the study and information on contamination are not going to be just filed away and never considered again.

RICHARD NIESLANIK: It's a tiered approach. You look at each operable unit, you look at each site, you look at the whole INEL. And each time you will resurrect all of that data. Someone mentioned earlier, put it in the third drawer at the bottom just next to the trash can. No, this data is available and will be continued to use as the risks are expanded.

I know this really hasn't come up in much of the conversations, but there's also impact on the ecology in general. I mean, this ditch certainly has an ecological niche associated with it. We assessed what kind of impact those contaminants have on the ecology. There's an ecological assessment portion as

well. It's hard to assess the ecology when you're looking at a narrow little strip of ditch. That whole thing will be revisited again and again at the Waste Area Group level and again at the INEL level to keep using that data to build a bigger and bigger package so that you assess the risk from a cumulative point of view as well.

NOLAN JENSEN: In fact, we just had meetings amongst the three agencies a couple of weeks ago to talk about how we will go about evaluating cumulative risks and factoring everything together. So, we're going to be --

DAVE HOVLAND: That involved the ecological experts from the three agencies. From a State perspective, that would be Jeff Fromm; from Nolan's perspective, you have your experts; and then EPA has their experts. So they're looking at the big picture.

NOLAN JENSEN: It's more complicated than just -- not only are there different sites, but there are different pathways. You've got to evaluate, combine groundwater, soil ingestion, air, radiation. If you add all those up, how do they all interplay?

UNIDENTIFIED SPEAKER: Yeah, there is a bigger picture to it.

UNIDENTIFIED SPEAKER: One of the approaches that's been used at this site in the past has been to literally and intentionally dilute discharges so that the concentrations were actually lower, but it was a deliberate dilution as a solution to pollution.

UNIDENTIFIED SPEAKER: Well, that's been deliberate for years, that's a standard practice.

RICHARD NIESLANIK: In the early years of operation, some of those things went on, certainly not in the recent past.

UNIDENTIFIED SPEAKER: Actually, you have a much higher danger to the pollutants here than in Paradise Creek coming out of the sewage plant right here in Moscow than you probably do from breathing air on the mountain. I'm not saying you're free of all your problems.

UNIDENTIFIED SPEAKER: Go over to WSU where dilution is the solution. They pour stuff down the drain all the time. They're another subject.

UNIDENTIFIED SPEAKER: I know it's late and I certainty appreciate everyone staying and answering questions, it's kind of interesting. I'd like to know -- maybe a basic question, what's the context of remediation that's (inaudible) high now in terms of trying to monitor for 30 years? Is the goal to be

able to have unrestricted use of these properties? What's the overall context?

RICHARD NIESLANIK: The land use issues is a huge concern. I'm sure that the Citizens' Advisory Group is going to have some input into that; and the agencies have a lot of input into that. And the answer is no one really knows what the long-term use of the site would be. There are projections, predictions and what things we might see.

And part of the decisions there has to be what things do we find during our investigations? If we clearly find things in the investigations somewhere that would preclude releasing the land, then certainly that's something we should look at. But the goal is not to necessarily keep control of it, but it's projected that there would be some control over this land for 30 years.

UNIDENTIFIED SPEAKER: That would influence your selection of remediation alternatives?

RICHARD NIESLANIK: Yes. Again, that all interplays certainly.

NOLAN JENSEN: What is done typically is evaluating different scenarios. Like evaluating like it as it is now, evaluating it if someone lives there in 30 years, if someone lives there in a hundred

years. And then look at all those together and try to make the best decision we can. But definitely, we can't see into the future very far, very predictably.

Any more questions before our comment period? Again, these folks will stay around for a little bit afterwards if you'd like to talk to them.

We'll open the comment period. And again, just like before, we'll not respond. This is your time to give a statement or a comment, and take up to five minutes. And I think that's about it. So go ahead. Is there anybody who would like to comment? Oh, and please state your name if you would.

(A comment was made by Joel Hamilton starting on page 96.)

CHUCK BROSCIOUS: Chuck Broscious, Environmental Defense Institute. As far as the ditch project goes, I would much rather see a lined evaporation pond being used for on-site discharges, because I don't have -- I would not like to see continued washing leachate migration of those contaminants that are already in that ditch and the possibility of introducing more contaminants into the ditch.

As far as the characterization, that is, the

self characterization of the constituents in the landfills, I'm real dubious of that particularly within the context of what's going on right now when the Navy has refused for nearly two years to release its worker exposure and dosimetry records to the National Centers for Disease Control that's conducting the dossier construction study of workers on the INEL site and also effective off-set populations. You know, when the Navy is pulling stunts like that and refusing to release those records for those kinds of studies, I'm a little bit concerned when there's not any independent assessment of some of those records of material that may have gone into those landfill sites. That's it.

NOLAN JENSEN: Anybody else? Again, I think the comment period on this project goes to May 12. So again, there's that pre-addressed, postage paid sheet at the end of the Proposed Plan that you can submit anytime. No more?

Thank you very much. We'll mill around here while we put things away if you want to talk to the folks.

CHANGES IN FORM AND SUBSTANCE MADE IN THIS FOREGOING ORAL PUBLIC MEETING:

	PAGE #	LINE #
should read, "What we're covering is what's already been released into the subsurface."	26	2, 3

CERTIFICATE

STATE OF IDAHO)
) ss
COUNTY OF NEZ PERCE)

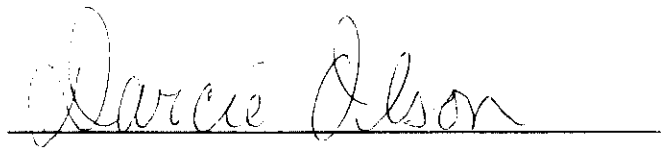
I, DARCIE OLSON, A Certified Shorthand Reporter and Notary Public in and for the State of Idaho residing at Lewiston, Idaho, do hereby certify:

THAT the annexed and foregoing public hearing was taken before me and reduced to typewriting under my direction, said hearing being taken at Moscow, Idaho on April 21, 1994 and being completed on said day;

I FURTHER CERTIFY that I am not a relative or employee of any of the parties to said action and that I am not financially interested in the said action or the outcome thereof;

I FURTHER CERTIFY that the said hearing, upon oral testimony as above transcribed, is a full, true, and correct transcript of the testimony of said speakers made and taken at the time of the foregoing hearing;

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal this 16th day of May 1994.



DARCIE OLSON, CSR
Notary Public in and for the
State of Idaho, residing at
Lewiston, Idaho